

# The Causality between Financial Development and Economic Growth: Panel Data Cointegration and GMM System Approaches

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## Abstract

The debate on the direction of causality between financial development and economic growth has been comprehensively growing since 1980s in theoretical and empirical literature. The existing literature provides conflicting views of this relationship. For this reason, the purpose of this paper is therefore to empirically investigate the direction of causality between finance and growth using panel data cointegration and GMM system approaches. If it is acknowledged that financial development stimulates growth, then economic growth may reciprocally stimulate financial development. The empirical analysis is based on a sample of 10 countries, 6 from the OECD region and 4 from the MENA region during 1990-2006, reports the following results: a panel data cointegration analysis confirms a long-term relationship between financial development and economic growth for the OECD and the MENA countries. The GMM system approach shows that financial development and real GDP per capita are positively and strongly linked. The error correction model approach shows that causality is bi-directional for the OECD countries and unidirectional for the MENA countries, i.e. economic growth stimulates financial development.

**Keywords:** Financial development, Economic growth, Causality, Cointegration and GMM system

**Jel Classification :** O16, G21, L11 et L25.

## 1. Introduction

The study of the relationship between economic growth and financial development has known a peak during these last decades, mainly with the works of King and Levine (1993). The authors' main thesis is that financial intermediaries are likely to push capital accumulation and economic factors' productivity growth, leading to economic growth. Subscribing to the belief that financial development is a key factor of economic growth, Levine (1997) notes that financial intermediaries improve risk management, making financial transactions, savings mobility and the exchange of goods and services easy to make. Ang (2008) finds that an efficient financial system positively contributes to economic growth. At the beginning of the 1990s, the endogenous growth literature stresses the significance of finance development for a long term economic growth. These studies seek to justify financial liberalization, reaching the same conclusion: the financial system should be liberalized to insure its good functioning, boost savings, encourage productive and profitable investments, push technology growth and sustain economic growth. Furthermore, these studies pointed to the positive effect that development of banks and financial markets have on economic growth as allocating a large proportion of savings to investment is made possible. Galindo et al (2007) highlight the positive role that financial liberalization may play in the development of banks by suppressing administrative fixation of interest rates and efficiently granting credits. Empirically, the positive relationship between financial development and growth is still scarce, and the causal link has not been resolved. A first wave of studies conducted by Spears (1992), Calderon and Lin (2003), De Gregorio and Guidotti (1995), Odedokun (1996), Habibullah and End (2006), Ang and Mckibbin (2007), Singh (2008) and Giuliano and Ruiz-Arranz (2009) note that financial system development is a condition for economic growth. These studies suggest that financial system liberalization is necessary to improve savings mobility, implement an efficient risk diversification, and to undertake an evaluation of investment projects. These advantages are visible only within a developed financial system which makes its positive influence on economic growth possible. However, other studies like those of Agbetsiafa (2003), Waqabaca (2004) and Odhiambo (2004) endorse a different stand and assume that economic growth does indeed lead to financial development. Finally, the last wave of studies represented by the work of Fowowe (2010) favors the existence of a bidirectional relationship between finance and growth. It is worth noting that the results reported in these studies are often inconclusive. This paper contributes and improves upon the existing literature by using panel data cointegration and GMM system in OECD and MENA countries.

The empirical results of the paper show: The panel results point to a long-term relationship between financial development and growth for the OECD and MENA countries. As a consistency check, we also used a GMM system dynamic panel estimator, like Levine et al (2000), to deal with key problems (omitted variable bias and simultaneity bias) plaguing past studies of the link between financial development and economic growth. We find that financial

development is positively and robustly linked with economic growth. For robustness tests, we have used the error correction approach. Our results support the idea that the causality is bi-directional for the OECD countries and unidirectional (economic growth- financial development) for the MENA countries.

The remainder of this paper is organized as follows: Section 2 presents a brief review of the literature and discusses the relationship between financial development and economic growth. Section 3 identifies the model specification, variables definitions, econometric approaches and reports the major empirical results. Section 4 concludes the paper.

## **2. Relationship between financial development and economic growth: a review of the literature**

The crucial role of financial development in any process of economic development has been subject to numerous debates in the economics and finance literature. The early studies of Gurley and Shaw (1955), Goldsmith (1969) and Hicks (1969) seem to have suggested that financial development stimulates economic growth. Similar ideas are reported by Show (1973) who advocates that financial intermediaries promote investment and consequently contribute in boosting economic growth rates. Furthermore, Braun and Raddatz (2007), Ranciere et al (2007), Jung (1986), Roubini and Sala-I-Martin (1992) and King and Levine (1993) believe that level of financial intermediation is a good indicator of economic growth and that financial development is an important key to economic growth. In this line of thinking, Ang (2008), in a study on Malaysia, concludes that a developed financial system positively contributes to achieving higher economic growth rates through the increase of savings and private investments. Likewise, Baltagi et al (2009) advocate that banks development, sustained by a liberalization process, is an important mechanism of long-term growth in developed and developing countries.

Research suggests that causality depends on the level of development. According to the proponents of this thesis, financial development causes economic growth during the first phases of development. However, this effect gradually diminishes all along the development process till it reverses back. Subscribing to this idea, Greenwood and Smith (1998) elaborated models in which financial markets grow after a period of economic development, in turn promoting real growth. In some empirical studies, the causality thesis is very controversial despite the use of more elaborated econometric techniques. Time series analysis of causality has been the subject of several studies. Aretsis and Demetriades (1997), using an error correction model, examined causality on a sample of 12 individual countries, reaching mixed results (one-way and two-way causality). Moreover, the authors found out that for the same country results vary according to the financial development indicator used.

Beck et al (2000) attempted to examine the finance-growth nexus by considering regressors' simultaneity, yet they ignored the data's integration and cointegration features. Furthermore, their methodology did not consider the long-run and short-run relationships between variables. King and Levine (1993), studying a sample of 70 countries, introduced new measures of financial development and examined the impact of financial development on economic growth, capital accumulation pace and economic factors' productivity. The obtained results show an empirical link between financial development indicators and growth. Worth noting is that the regressions indicate that level of financial development offers an accurate prediction of economic growth rates and economic efficiency improvement in the future. Accordingly, Levine and Zevros (1998) reach the conclusion that financial development is an accurate indicator of economic growth. However, these studies did not mention the causality thesis, pointing out that levels of bank development and incoming liquidity are significantly and positively correlated with economic growth and productivity future rates. They further mentioned statistically significant relationships between savings rates and financial development variables.

Levine et al (2000) used the GMM estimator to delineate a positive relationship between the exogenous components of financial development and economic growth, productivity growth and capital accumulation. Differently from Levine et al (2000), Spiegel (2001), examining the relationship between financial development indicators and economic growth, used a panel data approach which allows for endogeneity of regressors and the optimum use of the lagged dependent variables. The results indicate that financial development indicators are correlated with total productivity growth and physical and human capital accumulation. Other studies like those of Rousseau and Wachtel (2000) and Beck and Levine (2004) conclude that exogenous components of bank and stock market development have a large economic effect on economic growth. With the same concerns, Demetriades and Hussein (1996), using the currency to GDP ratio as a measure of financial development, find out that causality is bidirectional, mainly for the developing countries.

Rousseau and Watchell (2000) applied time series tests on the variables financial development and economic growth in 5 countries. Using measures of financial development which include banking and non-banking assets, Rousseau and Watchell (2000) find out that the most dominant causality direction is financial development towards economic growth. The VAR approach allows the identification of long-term effects of financial development on growth and considers the dynamic interactions between the explanatory variables. Other authors like Xu (2000) reject the hypothesis that finance follows growth. Xu's analysis shows that financial development is crucial for long-term growth. Christopoulos and Tizianos (2004) devised an analysis using panel-based unitary roots and cointegration to examine the relationship between finance and growth in 10 developing countries. With the assumption that time series studies lack accurate results because of the short duration of data, they used time series tests to study causality on a panel by increasing sample size. The authors find evidence in favour of the financial development towards

growth causality thesis. No evidence was found for the opposite direction. The results point to a unique cointegration vector between financial development and growth, rejecting a short-term relationship between the two variables.

### 3. The Empirical Study

#### 3.1. Presentation of the sample and model

The empirical association between financial development and growth is more robust than the theoretical literature. Several studies support this hypothesis. The model to be tested is the following:

$$y_{it} = \beta_{0,i} + \beta_{1,i}F_{i,t} + \beta_{2,i}GV_{i,t} + \beta_{3,i}P_{i,t} + \varepsilon_{it}$$

Where:

y is the logarithm of real GDP per capita.

F is the measure of financial development. Many indicators of financial development have been proposed in the literature. In this study, we will retain two indicators:

Private credit by deposit money banks and other financial institutions to GDP (PC): *Private credit by deposit money banks and other financial institutions to GDP, calculated using the following deflation method:  $\{(0.5) * [Ft/P_{et} + Ft-1/P_{et-1}] / [GDPt/P_{at}]$  where F is credit to the private sector, P\_e is end-of period CPI, and P\_a is average annual CPI.*

Liquid liabilities (LL): *Ratio of liquid liabilities to GDP, calculated using the following deflation method:  $\{(0.5) * [Ft/P_{et} + Ft-1/P_{et-1}] / [GDPt/P_{at}]$  where F is liquid liabilities, P\_e is end-of period CPI, and P\_a is average annual CPI.*

P denotes annual change in consumer price index (CPI).

GV is the log of the ratio of government consumption to GDP.

$\varepsilon$  is the error term.

This equation is considered as a long-term relationship if it reproduces cointegration relationships. Data should be integrated at order 1. We will test the stationarity of the financial development indicators series, real GDP per capita, public expenditure indicators and inflation rate. We propose two types of tests: the univariate unitary root test for an individual country and the multivariate tests that examine stationarity for a panel of country. Panel data unitary root and cointegration techniques require a minimum of homogeneity to draw representative conclusions. For this reason, we decompose our sample into several subgroups.

Our study targets two groups of countries: Middle East and North Africa (MENA) group (Egypt, Morocco, Tunisia and Turkey) and OECD group (Spain, Greece, Iceland, Italy, Portugal and Sweden). Data cover the 1990-2006 period, taken from the World Bank (World Development Indicators 2009). Financial development variables are taken from Financial Structure Database (2008).

#### 3.2. Econometric tests and main results

##### 3.2.1. The unit root test

There are several panel data unit root tests. The most recommended tests are those of Persan and Shin (2003) and Maddala and Wu (2000). The non-stationarity test results for the two samples are reported in Table 1 below. All tests are in favour of the non-stationarity hypothesis. All variables are integrated at order 1.

##### 3.2.2. The cointegration test

Worth noting is that for small samples, the ADF-Stat estimated by the between model is the most robust. It is this statistic that we use to test the cointegration relationship between financial development and economic growth. Under the alternative hypothesis ( $H_1: \rho_i < 1, \text{ for all } i$ ), the value of Group-ADF inclines towards  $-\infty$ . The null hypothesis of non-cointegration is then rejected for the values closer to the left tail of the Gaussian distribution. Thus, at a 5% level, we accept the existence of a cointegration relationship when Group-ADF statistic is inferior to -1,645. The results seem to confirm a cointegration relationship between financial development and economic growth. The conducted cointegration tests based on geographical decomposition and development level indicate that financial development may characterize on the long-run economic growth. The Group-ADF tests are significant for all variables at the 5% level.

Using the fully modified ordinary least square method to test cointegration, the results for the OECD countries reported in Table 4 indicate that financial development has a positive effect on economic growth, except for Greece and Portugal which report insignificant negative coefficients. Positive but insignificant coefficients are reported as well for Spain and Ireland. The panel-based coefficient of PRCR (PC) is 0,79 with a t-student of 3,43, suggesting that the effect of financial development is significantly positive. The coefficients for public expenditure and inflation rate ratio report expected signs respectively positive and statistically significant at the 1% level. For the MENA countries, when PRCR (PC) is an indicator of financial development (Table 5), we note that Morocco reports a positive but statistically insignificant coefficient. Tunisia, Egypt and Turkey report a positive effect of financial

development respectively significant at the 1%, 5% and 10% levels. This positive effect becomes larger when the LL ratio is introduced into the cointegration equation. All countries report positive and statistically significant coefficients, except for Morocco whose t-student is 0, 84. Panel-based coefficients indicate that finance promotes economic growth as the coefficients of the two financial development measures PC and LL are positive and statistically significant at the 1% level. The first control variable introduced into the equation (public expenditure) reports a statistically significant and negative coefficient. As for the second variable (inflation rate), it reports negative and statistically insignificant coefficient. With reference to these results, and consistently with Baltagi et al (2009) and Fowowe (2010), there is a long-term relationship between financial development and economic growth for the MENA and OECD countries. Such a finding urges us to test causality between these two variables using a panel-based error correction model.

### 3.2.3. The GMM system approach

Similar to the seminal work of Levine et al (2000), we will use a dynamic panel model to test the causality between economic growth and financial development. The model to be estimate is described as follows:

$$y_{it} = a y_{it-1} + \beta_{0,i} + \beta_{1,i} F_{i,t} + \beta_{2,i} GV_{i,t} + \beta_{3,i} P_{i,t} + \varepsilon_{it}$$

We will use the method of GMM system because the Arellano and Bover (1995) and Blundell and Bond (1998) estimator augments Arellano and Bond (1991) by making an additional assumption, that first differences of instrumenting variables are uncorrelated with the fixed effects. It builds a system of two equations-the original equation as well as the transformed one-and is known as "system GMM". The Arellano and Bond test for autocorrelation has a null hypothesis of no autocorrelation and is applied to the differenced residuals. The test for AR (2) in first differences is more important, because it will detect autocorrelation in levels. The validity of the instruments is tested using a Sargan test of over-identifying restrictions and a test of the absence of serial correlation of the residuals. As our data contain a small number of countries, we prefer to display the method one-step GMM-in-System estimator of Blundell and Bond (1998). Table 6 presents the results of the GMM system approach (*xtabond2*).

First of all, the Sargan and serial-correlation tests do not reject the null hypothesis of correct specification (P-value of Sargan test and AR (2) test of Arellano and Bond are larger than 5% for OECD and MENA), lending support to our estimation results. For OECD countries, coefficients between economic growth and financial development are positive and statistically significant respectively 3.451 (liquid liabilities) and 2.266 (private credit). For MENA countries, coefficients between economic growth and financial development are positive and statistically significant respectively 0.219 (liquid liabilities) and 0.519 (private credit). This confirms results of Levine et al (2000) and implies that real sector and financial sector are interrelated to each other in OECD and MENA countries. The GMM system provides additional evidence of whether the finance development sector actually causes to higher rate of economic growth. Our findings are consistently with results of King & Levine (1993), Levine (1997), Demetriades & Hussein (1996) and Giuliano & Ruiz-Arranz (2009). A well-functioning financial sector can positively and strongly contribute to economic growth in both developing and developed countries.

### 3.3. Robustness tests: The error correction model

We will use the Granger causality test. This technique tests short-term causality and validates a long-term relationship. This test is twofold: it estimates the residual through the long-term relationship and the error correction model while incorporating the residual in the MCE equation. The model is written as follows:

$$\Delta GDP_{it} = \alpha_{1i} + \sum_{j=1}^k \beta_{1j} \Delta GDP_{i,t-j} + \sum_{j=1}^k \gamma_{1j} \Delta F_{i,t-j} + \sum_{j=1}^k \eta_{1j} \Delta X_{i,t-j} + \lambda_1 ECT_{i,t-1} + u_{it}$$

$$\Delta F_{it} = \alpha_{2i} + \sum_{j=1}^k \beta_{2j} \Delta GDP_{i,t-j} + \sum_{j=1}^k \gamma_{2j} \Delta F_{i,t-j} + \sum_{j=1}^k \eta_{2j} \Delta X_{i,t-j} + \lambda_2 ECT_{i,t-1} + v_{it}$$

With  $\alpha_{1i}$  and  $\alpha_{2i}$  are individual fixed effects, GDP and  $F_{it}$  are the two cointegrated variables,  $X_{it}$  is the set of control variables, ECT is the error correction term and  $u_{it}$  and  $v_{it}$  are error terms.

The parameters of the previous equation include the following important short-term and long-term implications:

$\lambda_1$  and  $\lambda_2$  parameters denote mobility of the equilibrium relationship between GDP and F. They indicate the speed at which equilibrium is restored and useful to compute the Gonzalo-Granger statistic.

$\gamma_{1j}$  and  $\gamma_{2j}$  parameters denote reactions to random shocks.

Tables 7, 8, 9 and 10 report the results of the error correction model for OECD and MENA countries. Using Fisher test (for the time series), we obtain the following results: Similar to Aretsis and Demetriades (1997), our results revealed a bi-directional Granger causality between financial development and economic growth for the OECD countries. These results sustain Fowowe's (2010) conclusions. Moreover, we note unidirectional economic growth-financial development causality for the MENA countries. Such a result may be explained by the intensive

interventions of the public authorities of these countries in the financial system, which made the contribution of the financial sector to capital accumulation very limited. Another explanation points to the efficiency of the reforms undertaken by the relevant institutions.

#### 4. Conclusion

This paper examined the causality between financial development and economic growth. We use two econometric approaches. The first is panel data cointegration. The panel results point to a long-term relationship between financial development and growth for the OECD and MENA countries. As a consistency check, we also used a GMM system dynamic panel estimator, like Levine et al (2000), to deal with key problems (omitted variable bias and simultaneity bias) plaguing past studies of the link between financial development and economic growth. We find that finance development is positively and strongly correlated with real GDP. This implies that financial sector and real sector are interrelated to each other in OECD and MENA countries. For robustness tests, we have used the error correction approach. Our results support the idea that the causality is bidirectional for the OECD countries and unidirectional (economic growth- financial development) for the MENA countries. The MENA region results may be explained by the weak financial systems of these countries and the State's intensive interventions in them. Such interventions tend to limit the contribution of the financial sector in the process of real sector.

This research can be extended by introducing financial and banking crises because it is recently argued that crises have a negative impact on the development of financial system. The policy implications of our findings are straightforward: to maintain a sustainable economic growth, all economies have to deepen the financial sector and undertake essential measures to strengthen the relationship between financial sector and real sector. Also, countries must strengthen banking and financial governance. A well-functioning financial sector can positively contribute to promote economic growth in both developing and developed countries.

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Table 1. Unit root test for OECD countries

	Persan and Shin test		Maddala and Wu test	
	Level	Difference	Level	Difference
GDP	0,56	-5,45***	10,44	85,4***
PC	-0,6	-9,3***	32,55	129,8***
LL	-	-	-	-
GV	0,33	-6,3***	15,2	83,7***
P	-0,11	-12,23***	20,6	170,9***

\*\*\* panel data stationary at 1%, \* panel data stationary at 5%

Table 2. Unit root test for MENA countries

	Persan and Shin test		Maddala and Wu test	
	Level	Difference	Level	Difference
GDP	0,5	-6,44***	7,34	77,33***
PC	-0,4	-7,78***	15,56	74,55***
LL	1,88	-6,39***	9,44	55,56***
GV	-0,23	-8,99***	13,88	94,19***
P	-1,13	-11,32	16,77	134,89***

\*\*\* panel data stationary at 1%, \* panel data stationary at 5%

Table 3. Panel cointegration tests

Dependant variable: Real GDP per capita

	PC	LL
OECD: Group ADF	-2,11798*	-
MENA: Group ADF	-2,44119*	-2,13206*

\* reject of the null hypothesis of non-cointegration at the level of 5%

Table 4. Results of cointegration for OECD countries (FMOLS)

	PC	GV	P
Spain	0,24 (0,56)	2,33*** (2,78)	-1,27* (-1,88)
Greece	0,76* (1,68)	0,93 (0,89)	-2,01* (-1,89)
Iceland	0,19 (0,69)	3,11*** (3,99)	0,36 (1,17)
Italy	1,42*** (3,97)	2,52*** (3,18)	-4,48*** (-3,68)
Portugal	-0,01 (-0,02)	2,44*** (2,66)	-0,88 (-0,49)
Sweden	0,49* (1,66)	2,39*** (2,62)	-6,89*** (-3,55)
Panel	0,79*** (3,43)	1,44*** (2,97)	-2,66*** (-3,87)

\*\*\*, \*\*, and \* denote the significance level of 1%; 5%; and 10%, respectively. The numbers in parentheses represent t-statistics.

Table 5. Results of cointegration for MENA countries (FMOLS)

	PC	GV	P	LL	GV	P
Egypt	0.48***(3,19)	-1,11***(-3,09)	1,09**(2,33)	1,15***(3,88)	-0,68***(-2,48)	-1,79***(-3,13)
Morocco	0.19 (1.29)	-0.00 (-0.01)	1.46 (1.50)	0.19 (0.84)	0.03 (0.06)	1.49* (1.94)
Tunisia	3.68***(3.35)	-1.71 (-1.43)	-3.21 (-1.50)	4.78***(3.76)	-1.07 (-0.64)	-5.13 (-1.49)
Turkey	1.26* (1.83)	-0.41 (-0.78)	1.77*** (5.00)	1.39*** (4.04)	-0.25 (-0.65)	1.40*** (5.59)
Panel	1.16 ** (2.04)	-0.76*** (-3.08)	-0.07 (0.92)	1.78*** (3.36)	-0.27*** (-4.74)	-1.34* (-1.60)

\*\*\*, \*\*, and \* denote the significance level of 1%; 5%; and 10%, respectively. The numbers in parentheses represent t-statistics.

Table 6. Financial development and economic growth: The GMM system approach of Blundell and Bond (1998)  
Depend variable: Real GDP per capita

OECD		OECD		MENA		MENA	
Variables	Coefficient	Variables	Coefficient	Variables	Coefficient	Variables	Coefficient
GDP (-1)	0.573*** (4.47)	GDP (-1)	0.580*** (4.93)	GDP (-1)	0.340*** (3.33)	GDP (-1)	0.380*** (4.19)
P	-0.017*** (3.09)	P	-0.016*** (3.13)	P	-0.032*** (3.57)	P	-0.038*** (3.49)
GV	-0.025 (0.50)	GV	-0.011 (0.16)	GV	-0.070*** (3.12)	GV	-0.047*** (2.75)
LL	<b>3.451**</b> (2.06)	PC	<b>2.266***</b> (2.95)	LL	<b>0.219**</b> (2.02)	PC	<b>0.519**</b> (2.10)
constant	3.927** (2.21)	constant	3.213 (1.47)	constant	-0.606 (0.85)	constant	-1.102*** (2.48)
Number of countries	06	Number of countries	06	Number of countries	04	Number of countries	04
Wald test	201.90	Wald test	283.03	Wald test	314.42	Wald test	28.55
P-value of Wald test	0.000	P-value of Wald test	0.000	P-value of Wald test	0.000	P-value of Wald test	0.000
AR (2) of Arellano and Bond test	-0.39	AR (2) of Arellano and Bond test	-0.43	AR (2) of Arellano and Bond test	-1.24	AR (2) of Arellano and Bond test	-1.25
P-value of AR (2)	0.693	P-value of AR (2)	0.665	P-value of AR (2)	0.213	P-value of AR (2)	0.211
Sargan test	13.72	Sargan test	13.40	Sargan test	16.06	Sargan test	17.25
P-value of Sargan test	0.394	P-value of Sargan test	0.417	P-value of Sargan test	0.246	P-value of Sargan test	0.188

Note: Estimation method is one-step GMM-in-System estimator of Blundell and Bond (1998).

AR (2): test of null of zero second-order serial correlation, distributed  $N(0, 1)$  under null.

The numbers in parentheses are t-statistics.

Sargan-statistics is the test of over-identifying restrictions.

\*, \*\*, and \*\*\* indicate statistical significance at the 1%, 5%, and 10% level.

Table 7. Causality test for MENA countries (Indicator of financial development: PC)

Null hypothesis	ECT <sub>t-1</sub>	F-stat
Ho: Financial development don't causes growth	0.004 (0.24)	F= 0.262 (0.734)
Ho: Growth don't causes Financial development	0.49 (0.003)	F= 0.316 (0.624)

The numbers in parentheses represent P-value

Table 8. Causality test for MENA countries (Indicator of financial development: LL)

Null hypothesis	ECT <sub>t-1</sub>	F-stat
Ho: Financial development don't causes growth	0.005 (0.45)	F= 0.61 (0.603)
Ho: Growth don't causes Financial development	0.39 (0.04)	F= 0.611 (0.364)

The numbers in parentheses represent P-value

Table 9. Causality test for OECD countries (Indicator of financial development: PC)

Null hypothesis	ECT <sub>t-1</sub>	F-stat
Ho: Financial development don't causes growth	-0.02 (0.07)	F= 0.567 (0.533)
Ho: Growth don't causes Financial development	0.23 (0.004)	F= 0.328 (0.743)

The numbers in parentheses represent P-value

Table 10. Causality test for OECD countries (Indicator of financial development: LL)

Null hypothesis	ECT <sub>t-1</sub>	F-stat
Ho: Financial development don't causes growth	-0.08 (0.09)	F= 0.433 (0.423)
Ho: Growth don't causes Financial development	0.19 (0.04)	F= 0.298 (0.147)

The numbers in parentheses represent P-value