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The Relation between Development of Financial Sector and Economic Growth: Applied Study on Egypt, France and Malaysia

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Abstract:

For the purpose of finding an optimal combination to finance the economic growth in Egypt, the paper examines the relation between the development of financial sector and the economic growth in Egypt, France, and Malaysia, to check the existence of this relation and to determine its direction. The econometric models used in this study are the co-integration test, the vector error correction model and the variance decomposition analysis. The main findings of this study are the existence of short and long-term relations, but with different directions, according to the development level of the country. For Egypt, the relation is moving from the development of the financial sector to the economic growth. For France, the relation is moving from the economic growth to the development in the financial sector. For Malaysia it is moving from the development of the capital market to the economic growth, and from the economic growth to the development of the banking sector.

Keywords: Financial development; Economic growth, Vector error correction model, Co-integration, Variance decomposition analysis.

JEL codes: A12, C01, C22, C51, E51

1. Introduction

The causal relationship between the development of the financial sector and the economic growth has been treated by many researchers. Perhaps the importance of knowing the direction of this relationship is that if the development of the financing sector comes before the economic growth, then it is necessary to have active fiscal and monetary policies to stimulate growth. If the contrary occurs, the development of the financial sector is achieved when the economy grows, this would require a greater emphasis on the development in the real economy.

Given the recent situation of lack of finance in Egypt, it has become clear to the researcher that it is important to study the relationship between the financing sector and economic growth. The added value of the research is to compare the situation in Egypt with that of a developed country such as France, and an emerging country such as Malaysia on the other hand, in order to find out the factors that would raise the level of performance of the finance sector in Egypt and the ways to enable Egypt to progress in ranking between countries in the financial development index issued by the World Economic Forum. From the point of view of financial development, France, was ranked 12th and Malaysia was ranked 16th. As for Egypt, its ranking is forty-ninth (World economic forum, 2011).

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The problem of research is to find the optimal combination to finance the economic growth through a variety of sources of financing, whether from the banking sector or the various instruments offered by the stock market. This is done through lessons learned from an advanced economy such as the French economy and the economy of an emerging country such as Malaysia.

The organization of the paper is as follows: section 2 presents the previous literature on the relationship between the development of the financing sector and economic growth. Section 3 explains the methodology of the study and section 4 is the applied part of the study. Section 5 shows the results of the study, and section 6 is the conclusion.

2. Previous literature

Economists like Schumpeter and Keynes believe that financial intermediation and financial services by financial intermediaries play an important role in macroeconomic variables such as economic growth, incomes, and poverty reduction. In contrast, some economists such as Lucas and Seers do not believe that there is a causal effect of financial intermediation on economic activity. While some economists like Robinson consider that the development of financial intermediation is a result of development processes and not a reason (Alomar, 2009).

Copelman, Thorsten and Hoffmann studied the impact of the development of the banking sector on economic growth and found a positive relationship. The increase in bank credit led to a significant increase in production and thus increased economic growth (Coplman, 2000) (Thorsten, 2000) (Hofman, 2001). Rousseau, Caridi, Mercan and Ismet, and Alomar reached the same conclusion. Rousseau concluded that the development of the financing sector plays a major role in influencing the real sector, and Alomar found that the economic growth has been linked to financial intermediation and banking institutions. Caridi found that the increased demand resulting from the increase of the credit leads to an increase in the economic activities. Mercan concluded that the effect of financial development on economic growth was positive and statistically significant (Rousseau, 2002) (Alomar, 2002) (Caridi, 2004) (Mercan and Ismet, 2013).

Edison and others studied the impact of international financial integration on economic growth and assessed whether the relationship depends on the level of economic development and development of the financial sector. The study found that international financial integration itself does not accelerate economic growth even when controlling certain financing characteristics (Edison, and others, 2002). While Rousseau and Wachtel tested the relationship between the development of the financing sector and economic growth across different countries. The study proved that, although the relationship between the development of the financing sector and the growth was strong from 1960-1989, it is no longer in recent data as it was (Rousseau and Wachtel, 2009). Eugine examined the relationship between financial intermediary development and economic growth in Nigeria. The relationship is found to be insignificantly negative in the long-run and significantly negative in the short-run (Eugene Iheanacho, 2016).

3. Research methodology

The descriptive and analytical approach was used to study the development of the finance sector in Egypt, France and Malaysia for the period 2000-2014. The econometric methodology was then used to test the relationship between the development of the financial sector measured by the size of bank credit as a percentage of gross domestic product (GDP) and the ratio of bank credit to bank deposits and stock capital as a percentage of GDP in one hand, and economic growth measured by GDP growth on the other hand for the period 1980-2014.

The econometric approach used the Co-integration method which includes both the auto-regressive model and the error correction model. Then the variance decomposition (VDC) model estimated the effect of one variable on the other variables to analyze the relationship between them in both the long and short term (Ackay, 1996).

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3.1. Variables and data sources:

Annual data for the period 1980-2014 is used. The variables used are:

Creditgdp: Bank credit as a percentage of GDP.

CreditDeposit: Ratio of bank credit to bank deposits.

Stockmktgdp: Ratio of capital market capitalization to GDP.

Gdpgrowth: GDP growth rate.

The data are obtained from the official website of the World Bank, the database of financial development.

3.2. Vector auto regressive (VAR) model framework:

The auto-regression vector model is used in the reduced form as follows:

$Y_t = A_1 Y_{t-1} + A_2 Y_{t-2} + ... + A_p Y_{t-p} + \epsilon_t$ ..... (1)

Where:

Y_t = [$GDPgrowth_t$ $Creditgdp_t$ $CreditDeposit_t$ $stockmktgdp_t$]' which is a vector that includes the four preceding defined variables

A_i: represents the transaction matrix and its dimensions KxK

ϵ: Random error vector where E (ϵ) = 0

$_p$[4]: The number of time lags t: time

K: The number of variables.

3.3. Model development steps

• **Stationarity tests:** They have been performed using the Augmented Dicky-Fuller (ADF) models. Since the use of the differences to stabilize these chains cause the loss of a lot of information related to the behavior of these variables in the long term, we used co-integration to overcome this problem.

• **Co-integration test**: The only way to study the long-term relationship between non stationary variables and integrated of degree (n) is to associate these variables with a co-integration relationship.

• **Error correction vector**: It is used to examine the existence of a relationship in the short term. Since the co-integration test indicates a long-term equilibrium relationship between the variables, while the short term may be unbalanced, the random term can be treated as the equilibrium error and used to link the behavior of the variable in the short term and its long-term value (Gujarati, 2003).

• **Variance decomposition**: It is the quantitative test of the effect of independent variables on the dependent variable, and the magnitude of the change in the variable in time period (t) due to a shock in the same variable or in the other variables.

4. Applied study

4.1 Descriptive analysis of the development of the financial sector

4.1.1 Descriptive Analysis of the Development of the Financial Sector in Egypt

4.1.1.1 Development of the Egyptian banking sector

[4] determined according to the minimum Akaike criteria information

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The paper begins the analysis in the fiscal year 2003-2004 that was characterized by several organizational measures, the most important of which was the designation of a new leadership of the Central Bank. It also concluded agreements for cooperation in various fields between Egypt and several countries. This included several areas such as avoiding double taxation and preventing evasion with Sudan and Malaysia, and the financing of part of the costs of the leadership rehabilitation program with the Arab Fund for Economic and Social Development (Economic Journal of the Central Bank of Egypt, 2004).

The total domestic credit recorded 422 billion pounds, of which 30 percent was allocated to the government sector, whose indebtedness to the banking system was about 35.6 billion pounds, while the private sector accounted for 53 % of the total domestic credit, which amounted to 223 billion pounds, leaving 9% for the family sector and 8% for the public business sector. The share of the private sector was declining through the years of the study while the share of the government sector in total credit was increasing, as illustrated by the following figures: (Economic Journal of the Central Bank of Egypt, different years).

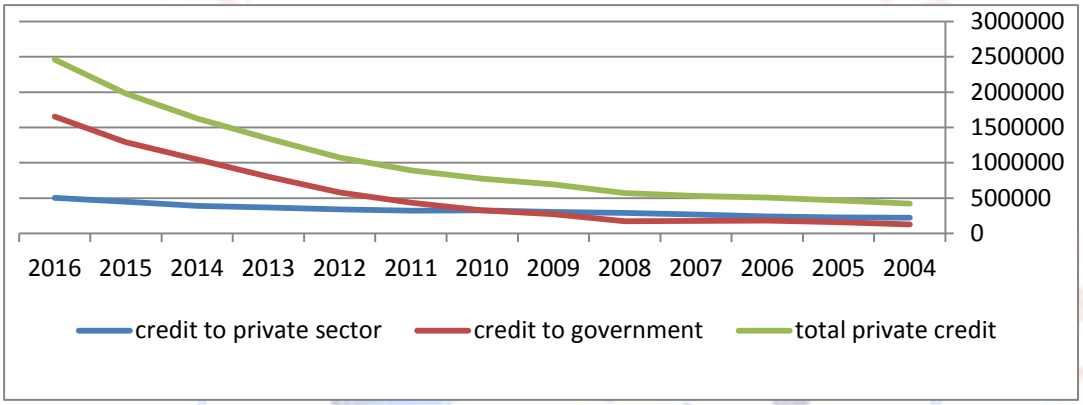

Figure (1): total domestic credit in Egypt by sectors. (official site of the Egyptian central bank)

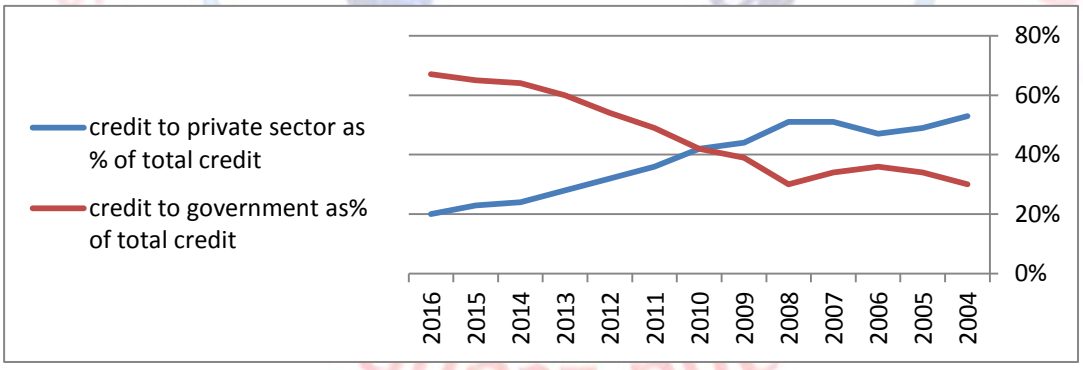

Figure (2): credit to private sector and credit to government as % of total credit in Egypt.(percentages calculated by researcher)

This is due to the crowding out effect. The contribution of the banking sector to finance the total deficit of the general budget in 2004 amounted to LE 31.4 billion, representing 60.8% of the total deficit funding. The Central Bank contributed LE 24.8 billion, leaving 6.6 billion for other banks. The contribution of the banking sector to finance the general budget deficit continued to increase until 2016 (official site of the Egyptian central bank).

4.1.1.2 Development of the Egyptian Capital Market

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The Egyptian Stock Exchange in 2014 was able to achieve more than the previous years, as shown in figure(3), which is why the market has come to be one of the best growing markets in the world according to Morgan Stanley indices. This was accompanied by an increased investor confidence, reflected in the liquidity in the market.

Morgan Stanley maintained the Egyptian Stock Exchange in the Emerging Markets Index (MSCI), which is an important tool for foreign investors to evaluate the markets. The year 2014 was one of the most important years of the Egyptian stock exchange at the international level cause Egypt has been chosen as the most developed and innovative African stock exchange market. (Official website of the Egyptian Stock Exchange)

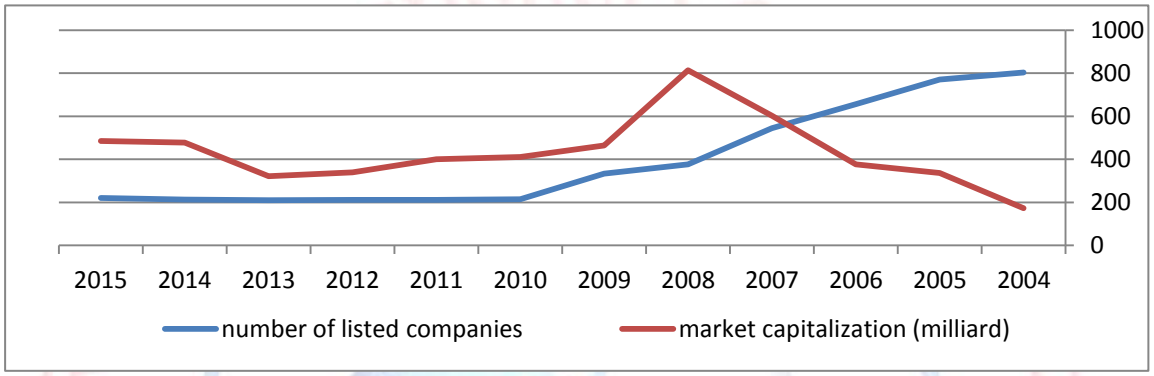

Figure (3): number of listed companies in the capital market and market capitalization in Egypt.(official website of the World Bank, the database of financial development.)

4.1.2 Development of the finance sector in France

4.1.2.1 Development of the banking sector in France

Although financial sector indicators show continued improvement in 2013-2014, banks are still exposed to financing risks. Banks have made significant progress in building capital and liquidity by increasing profitability and adjusting their financing structure. However, the development of the loan-to-deposit ratio reflects that banks face a problem with stable financing requirements, increasing from 121.4% in 2009 to 126% in 2011 as shown in figure (5). Debt relief operations continued and the assets of the five major banking groups increased to the total of the assets of commercial banks increased from 68.36% in 2000 to 79.5 in 2014, but declined in only two years, 2008 and 2011. (World Bank data)

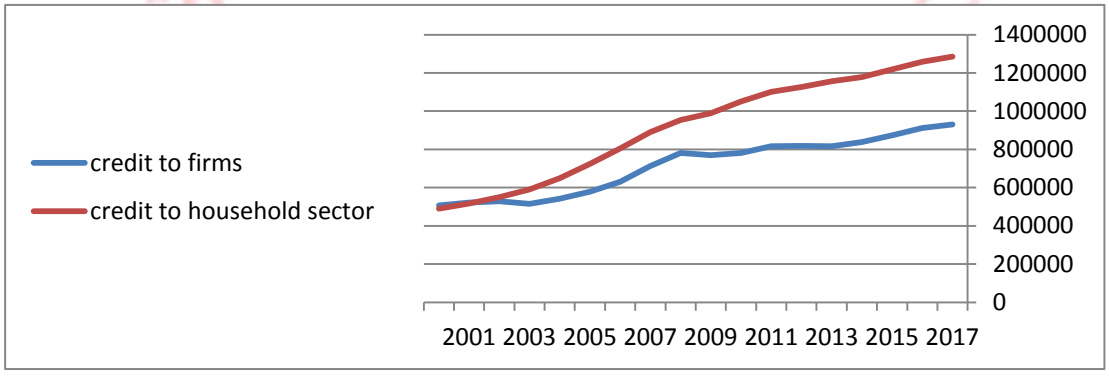

Figure (4): credit to firms and credit to household sector in France (http://webstat.banque-france.fr/fr/quickview.do?SERIES_K)

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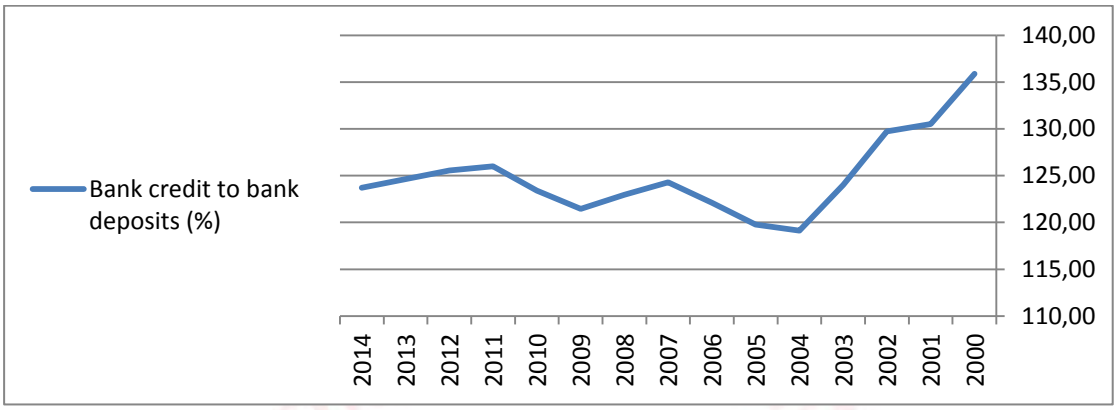

Figure (5): bank credit divided by bank deposits in France (official website of the World Bank, the database of financial development.)

4-1-2-2- Development of the French Capital Market

Capital markets play a major role in financing the economy. These markets provide 40% to 45% of the total funding of French companies, both capital and corporate debt. They remain the most liquid and active markets and are the main actors in rebuilding capital in an economy characterized by rapid development in markets and technologies. Its role is also very important in financing small and medium-sized companies. The IPO (initial public offer) of the French company Biotech for nearly 150 million euros in the financial markets in 2012 is an evidence of the importance of these markets in financing (Thierry Francq, 2013).

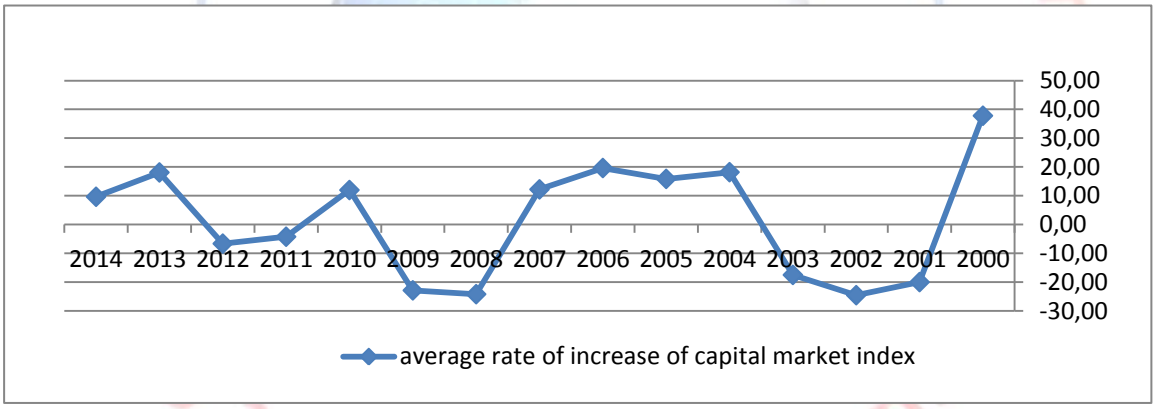

Figure (6): average rate of increase of capital market index in France (official website of the World Bank, the database of financial development.)

4.1.3. Development of the finance sector in Malaysia

4.1.3.1 Development of the banking sector in Malaysia

Malaysian banks were characterized by a good capitalization in 2014 with convenient capital ratios. Local banking groups are expected to meet Basel III capital requirements. Asset quality has improved over the past five years. There has been significant growth in lending to the family sector, driven by steady economic growth. The Bank's risk weighted capital ratio rose from 1.6% in 2006 to 15.1% in 2011, well above the minimum required by the Central Bank of Malaysia of 8% and from the minimum requirement of Basel III of 10.5% (International monetary fund, 2014).

The credit-to-deposit ratio was above 100% until 2002, as shown in Figure (7), followed by moderate ratios indicating the stability of the Malaysian banking system.

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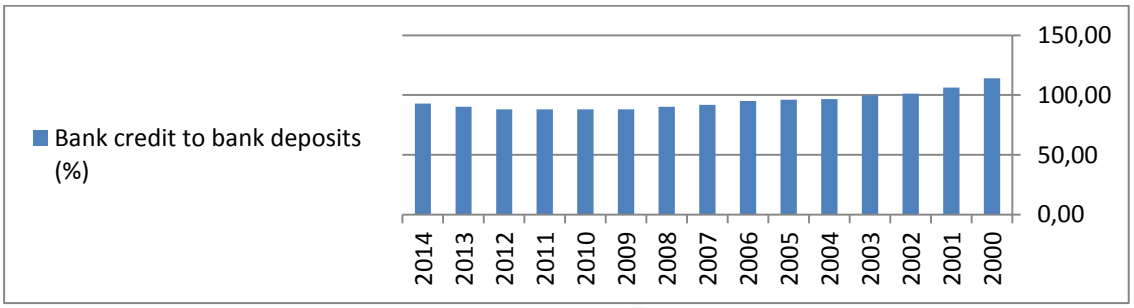

Figure (7): bank credit to bank deposits in Malaysia (official website of the World Bank, the database of financial development.)

4-1.3.2 Development of the Capital Market in Malaysia

Credit mediation by the banking sector has been increasingly complemented by developments in the capital market through growth in savings funds, pensions, insurance and mutual funds. The capital market has expanded rapidly at a compound annual growth rate of 11% over the past decade and the issuance of shares and bonds increased at a CAGR of 8%.

The strong growth in the capital market was based on the capital market master plan developed to restore and reform the domestic financial system in after the Asian financial crisis 1997. In 2014, the financial market share in finance activity is about 46%, while the financial institutions share is about 54% (Securities commission Malaysia, 2014).

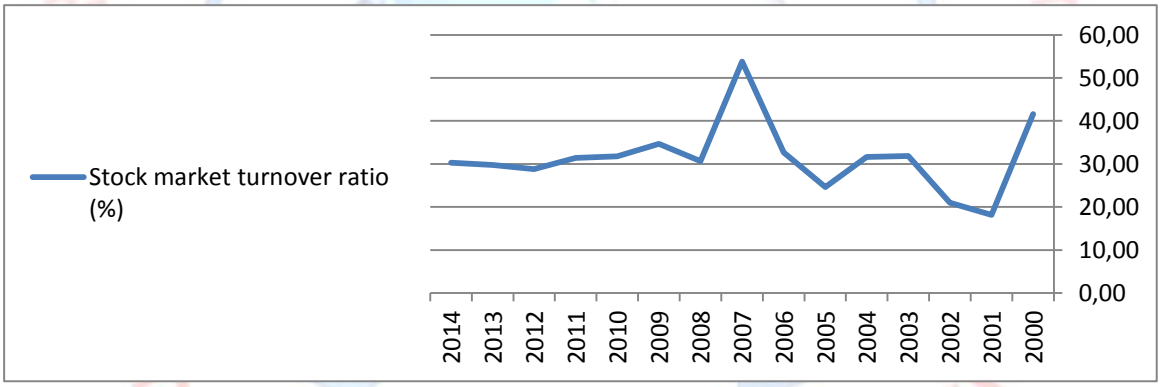

Figure (8): stock market turnover ratio in Malaysia (official website of the World Bank, the database of financial development.)

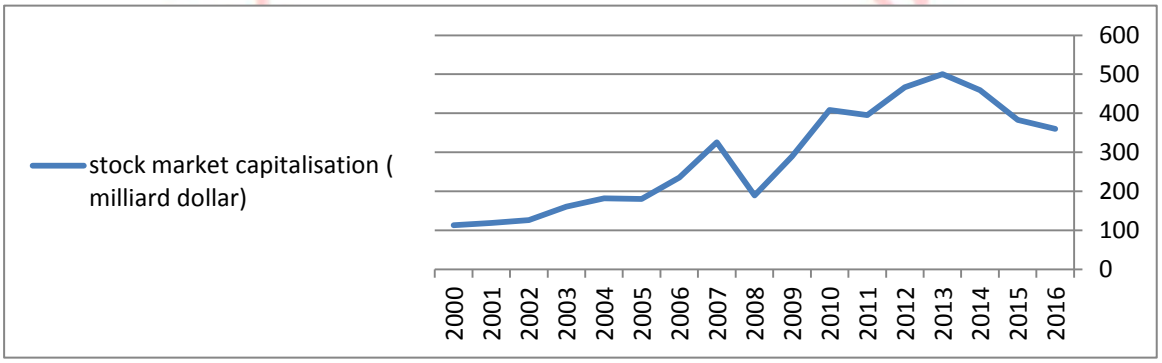

Figure (9): stock market capitalization in Malaysia (source of data is https://ycharts.com/indicators/malaysia_market_capitalization_of_listed_companies_usd)

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4.2. Econometric analysis of the relationship between the development of the financial sector and economic growth.

4.2.1. Econometric analysis of the relationship between the development of the financing sector and economic growth in Egypt.

The stationarity test for the variables in Egypt indicates that the variables are not stationary at level but at their first difference. Due to the non-stationary of the variables, the Johansen co-integration test was used to test the possibility of a long-term relationship between the variables studied. The result was the existence of a long term relation between the variables at a significant level 95 %.

The vector error correction model was estimated and the error correction coefficient was a negative value of -0.299016, which indicates that there is a relationship in both the short and long term between the model variables. (table 1)

Table (1): vector error correction estimates

Vector Error Correction Estimates

Date: 01/09/17 Time: 21:03

Sample (adjusted): 1992 2014

Included observations: 23 after adjustments

Standard errors in ( ) & t-statistics in [ ]

Error Correction :	D(GROWTHRATE)	D(BANKCRTODEPOSIT)	D(PRIVATECRED)	D(STOCKMKTCAPITAL)
CointEq1	-0.299016	-0.206139	-0.656670	-4.862896
	(0.18023)	(0.44141)	(0.45307)	(0.86245)
	[-1.65909]	[-0.46701]	[-1.44939]	[-5.63846]
R-squared	0.742921	0.852088	0.672494	0.879406

Calculated using eviews 9

The variance decomposition table was calculated for the different variables for 10 periods. By analyzing the results of the variance decomposition of the GDP growth, it was found that 100% of the variation in the output growth rate was due to the same output shocks in the first phase of the forecast. (table (2)) . The effect of the growth rate on the output declined from 100% to 71.6% and then decreased to 34.8% over the period of analysis, leaving about 65% of the changes in the GDP growth rate to the changes in the other variables of the model as follows:

- About 17 % of the changes in the GDP growth rate are due to the change in the ratio of credit to bank deposits.

- About 27% of the changes in the GDP growth rate are due to the change in the ratio of capital market capitalization to GDP.

- About 21 % of changes in GDP growth rate are due to the change in the ratio of private credit to GDP.(table 2)

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By analyzing the variance decomposition of the other variables of the model, it was found that the influence of the growth rate of the GDP on the other variables is between 3% and 7% which is very weak.

Table 2: variance decomposition

Variance Decomposition of GROWTHRATE:

Period	S.E.	GROWTHRATE	BANKCRTODEPOSIT	PRIVATECRED	STOCKMKTCAPITAL
1	0.858961	100.0000	0.000000	0.000000	0.000000
2	1.040432	71.63823	15.38643	0.011456	12.96388
3	1.222743	60.56960	16.65810	12.37238	10.39992
4	1.271474	56.07075	15.90540	18.27080	9.753050
5	1.386844	50.16254	13.91579	23.85922	12.06246
6	1.494039	44.09490	12.96557	25.05078	17.88875
7	1.609788	39.83911	11.51401	24.18247	24.46440
8	1.672097	37.79482	10.81762	23.21902	28.16853
9	1.716845	36.60914	12.34243	22.32093	28.72751
10	1.766734	34.84843	16.72494	21.18406	27.24257

Calculated using eviews 9

4.2.2. Econometric analysis of the relationship between the development of the finance sector and economic growth in France.

The stationarity test showed that GDP growth rate is stationary at level and the other variables are stationary at the first difference. It is possible to do co-integration test since the level of integration of the dependent variable is less than the order of integration of the independent variables. The results showed the existence of significant relation between the GDP growth rate and both the ratio of bank lending to bank deposits and the ratio of private credit to output. But not significant between the GDP growth rate and the capital market capitalization ratio. The reason for the non-significance may be the existence of extreme values in some observations. (figure10)

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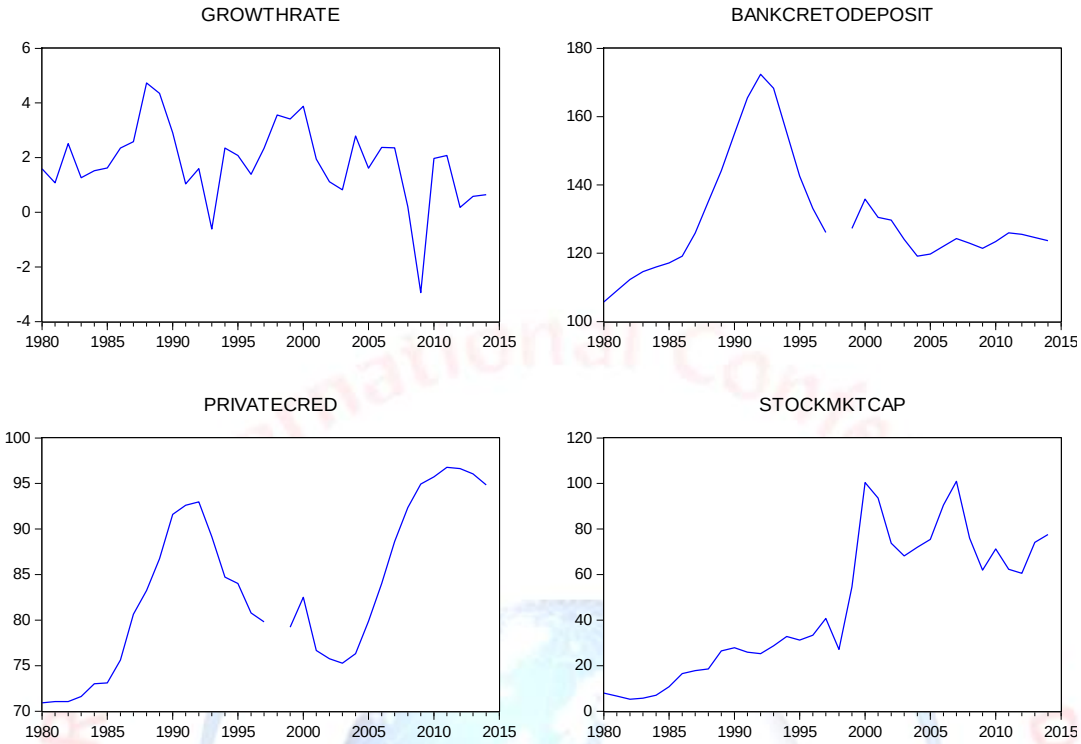

Figure (10): evolution of variables in France through time (done using eviews 9)

The error correction vector was found and a short-term correlation was also found between the variables under study. The error correction coefficient has a negative value of -1.039102 and is significant.

Table (3): vector error correction estimates in France

Vector Error Correction Estimates

Date: 02/02/17 Time: 11:37

Sample (adjusted): 1982 2014

Included observations: 30 after adjustments

Standard errors in ( ) & t-statistics in [ ]

Error Correction:	D(GROWTHRATE)	D(BANKCRETODEPOSIT)	D(PRIVATECRED)	D(STOCKMKTCAP)
CointEq1	-1.039102	1.294600	0.653607	-2.400032
	(0.28320)	(0.76286)	(0.44257)	(1.88486)
	[-3.66914]	[1.69704]	[1.47685]	[-1.27332]
R-squared	0.437992	0.696061	0.485702	0.076340

Calculated using eviews 9

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The variance decomposition showed the decline in the effect of the GDP growth rate on itself from 100 % to about 89%, over the period of analysis, leaving about 11% of the changes in the GDP growth rate to the changes in the other variables of the model as follows:

- About 6% of the changes in the GDP growth rate are due to the change in the banking sector represented in the ratio of credit to bank deposits and in the ratio of private credit to GDP.

- About 5% of the changes in the GDP growth rate are due to the change in the ratio of capital market capitalization to GDP.

For the rest of the variables, the role played by the GDP growth rate in influencing the other variables in the economy varies from one variable to another as follows:

- About 40% of the changes in the ratio of credit to bank deposits are due to the change in the rate of growth of GDP.

- About 19% of the changes in the ratio of private credit to output are due to the change in the rate of growth of GDP.

- Only 3% of the changes in the variable capital market capitalization ratio are due to the change in the rate of growth of GDP.

Table (4): variance decomposition of gdp growth rate in France

Variance Decomposition of GROWTHRATE:

Period	S.E.	GROWTHRATE	BANKCRETODEPOSIT	PRIVATECRED	STOCKMKTCAP
1	1.344075	100.0000	0.000000	0.000000	0.000000
2	1.373325	97.44705	0.063194	0.009098	2.480656
3	1.403081	96.97412	0.244269	0.145531	2.636076
4	1.426825	94.85499	0.432550	1.026136	3.686322
5	1.441450	93.21877	0.511273	2.306741	3.963219
6	1.452288	92.01199	0.511020	3.422611	4.054381
7	1.460452	91.02816	0.515041	4.245704	4.211099
8	1.467397	90.16917	0.558864	4.817276	4.454689
9	1.473897	89.39571	0.630275	5.207048	4.766965
10	1.480069	88.67893	0.701329	5.483506	5.136234

Calculated using eviews9

4.2.3. Econometric analysis of the relationship between the development of the finance sector and economic growth in Malaysia

A stationarity test was carried out and the results were the possibility of a co-integration between the variables of the study. The dependent variable is integrated of order (0), while the explanatory variables are integrated of order (1), which guarantees that the error is integrated of order (0).

A co-integration test showed that there was a relationship between the variables of the study in the long term. However, it is not significant in the case of the variable credit ratio to the private sector. This may be due to extreme values due to the Asian and global crises.

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According to the results of the error correction vector it is possible to have a relationship in the short and long term since the error correction coefficient takes a negative and significant value, but it is a weak relationship as the value of R^2 shows.(table 5)

Table (5): vector error correction estimates in Malaysia

Vector Error Correction Estimates

Date: 02/03/17 Time: 13:27

Sample (adjusted): 1983 2014

Included observations: 32 after adjustments

Standard errors in ( ) & t-statistics in [ ]

Error Correction:	D(GDPGROWTH)	D(BANKCRETODEPOSIT)	D(PRIVATECRETOGDP)	D(STOCKMKTCAP)
CointEq1	-0.764119	1.060911	0.793936	-1.336948
	(0.19828)	(0.31005)	(0.44628)	(1.54012)
	[-3.85365]	[3.42179]	[1.77899]	[-0.86808]
R-squared	0.471554	0.523734	0.465535	0.115428

Calculated using eviews 9

The variance decomposition of the GDP annual growth rate showed the decline in the effect of the GDP growth rate on itself from 100 % to about 87% and then to 67%, over the period of analysis, leaving about 33% of the changes in the GDP growth rate to the changes in the other variables of the model as follows:

- About 22% of the changes in the GDP growth rate are due to the change in the ratio of credit to bank deposits.

- About 10% of the changes in the GDP growth rate are due to the change in the ratio of capital market capitalization to GDP.

- About 0.5% of the changes in the GDP growth rate are due to the change in the ratio of private credit to GDP.

For the rest of the variables, the role played by the GDP growth rate in influencing the other variables in the economy varies from one variable to other as follows:

- About 45% of the change in the ratio of credit to bank deposits is due to the change in the rate of growth of GDP.

- About 35% of the change in private credit as a percentage of GDP is due to the change in the rate of growth of GDP. While about 30% of its change is due to shocks in the private credit as a percentage of GDP. And approximately 28.5% of its change is due to the change in the ratio of capital market capitalization to GDP.

- Only about 5% of the change in capital market capitalization to GDP is due to the change in the rate of growth of GDP, while about 85% of its change is due to shocks in the ratio of capital market capitalization to GDP.

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5. Results

• For Egypt, the relationship is going from the development of the financial sector to the development of the GDP, where about 40% of the change in GDP growth is due to the change in the variables of the banking sector and 27% of the change in GDP growth is due to the change in the capital market capitalization variable.

• For France, the relationship is moving from the development of economic growth to the development of the financial sector. GDP growth rate is affected by the change in the variables of the financial sector with a very small percentage, while the GDP growth affects and causes 40% of the change in the ratio of credit to deposits and 20% of the change in private credit as a ratio to output, as explained by the decomposition of variance. The relationship between the variables of the financial sector and economic growth is weak, as explained by the coefficient of determination.

• For Malaysia, the effect of the change in the GDP growth rate on the model variables exceeds the effect of those variables, except for the case of the capital market capitalization ratio. That is to say that the relationship is moving from the development of economic growth to the development of the banking sector, while moving from the development of the capital market to the development of economic growth.

Thus, the greater the progress of the economic state, the more the relationship moves from the development of economic growth to the development of the financial sector. As Egypt is on the way to progress, the relationship is in the opposite direction. Egypt must continue to improve the banking sector and the capital market because this will lead to high rates of economic growth. Malaysia's experience is good evidence as the econometric model showed that the development of Malaysia's capital market is affecting economic growth which is, on his turn, affecting and developing the banking sector according to the achieved level of economic growth.

6. Conclusion

The paper started by presenting some previous applied studies, most of which agreed on the existence of a relationship between the development of the financial sector and the economic growth. Then a descriptive analysis of the development of the financing sector in Egypt, France and Malaysia was performed. This descriptive study found that the banking sector does not play the required role in Egypt due to the impact of crowding-in - as the contribution of the banking sector to finance the budget deficit increase over the years - and the Egyptian Stock Exchange needs further development. France has achieved significant progress in building capital and liquidity, but the ratio of credits to deposits reflect that banks face a problem with stable financing requirements, while financial markets play a major role in financing the economy. These markets provide 40% to 45% of the total funding of French companies. In Malaysia, the financial sector is well diversified. Credit intermediation by the banking sector has been increasingly complemented by developments in the capital market.

The relation between the development of the financing sector and the economic growth was tested using the co-integration test, the error correction method, and the analysis of the variance decomposition of the countries studied. A short and long-term relationship was found. For Egypt, the relationship is moving from the development of the financial sector to economic growth. For France, the relationship is moving from economic growth to development in the financial sector. For Malaysia it is moving from the development of the capital market to economic growth and from economic growth to the development of the banking sector.

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