Relationship between Bank Credit and Economic Growth: Evidence from Jordan

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Abstract

Despite the growing literatures that examined the relationship between financial developments and growth of any economy, there is scarceness in the empirical studies that examine the influence of bank credit on economic performance or growth at secrotal level of any country. Therefore this study came to examine the relationship between bank credit and economic growth in Jordan at different sectors for the period that span from 1993 to 2014. We employ two different methodologies Vector Error Correction Model (VECM) and Granger Causality Test,

The results report for a long run relationship could be inferred between Real GDP, and its Explanatory variables of Total Bank Credit (TBC); Bank Credit for Agriculture sector (CFA); Bank Credit for Industry sector (CFI); Bank Credit for Construction sector (CFC); Bank Credit for Tourism sector(CFT). So we can suggest that TBC, CFA, CFI, CFC, and CFT are in the long term relationship with the development of Jordanian economy.

Granger causality test conclude for a causal relationship going from economic growth to bank credit at agriculture and construction sectors in Jordan economy. Also the results report bidirectional causality observed among economic development and bank credit to construction sector that is the most important sectors in this economy. Moreover, our results point out that the efficiency of the bank credit facilities in a major economic sectors has an important role in the Jordanian economic growth, and shows the needs to enhance the role of financial sector for different economic sectors by adopting more appropriate macroeconomic policies.

Keywords: bank credit, economic growth, (VAR) model, Vector Error Correction Model (VECM)

1. Introduction

The major portion of the financial literature point out that financial institution development should lead to the development of any economy. The relationship between development of financial sector and the economic growth firstly presented through work of Schumpeter (1911). He confirmed that the services provided by financial institutions could stimulate technological innovation and economic growth by funding productive investments.

The different people from different sector and different organization require financing for many purposes. The financial services provided the finance from different financial institutions that are divided into capital and money markets. we have commercial banks in the money markets that provide financial services, and his basic role involves taking funds from the surplus unit who have no instant needs to the deficit units, or may be in form of credit to investors who have smart ideas but lack the necessary funds to implement the ideas to create additional wealth.

Due to the rapid development of mankind all over the world the economic development occupied crucial role, and that increasing with time in order to raising the level of the peoples economically and socially. In the terms of economic development the development of financial sector, especially the bank credit play a vital important role to provide the necessary financial resources to finance various economic activities, and re-directing it to serve the economic sectors in correct way. There is many believes the changes in the volume of credit has a significant impact on Level of economic activity in terms of prosperity or deflation.

Potential positive connection between economic growth and the credit markets is evident to some extent because the developed countries without exception have the most advanced credit markets.

There are various views about the causality relationship between financial intermediation and the growth of any economy. Many explanations have been offered empirically for this causality relationship and its causality direction. Bayoumi and Melander (2008) in his seminal work found when overall credit decreased by 2.5% causes the level of GDP to be decreased by 1.5%, Similarly Demetriades and Hussein (1996) reported the same outcomes.

The prior findings in the financial literature have made it useful to investigate whether bank credits in our country can be depending on to motivate the growth of the Jordan economy or not. So that our study came to investigate the contribution of banks credit in Jordan for different sectors on economic growth through using different models to explore the role of the bank credit in the process of generating the growth, and based upon historical data we inspect the effectiveness of bank sector and the causality direction

A significant part of credit in Jordan is spread through the banking system, although there are some other institution, for example micro finance institutions, finance companies, and credit cooperative societies that provide credit for small projects. However, the data availability for these kind institutions is very limited.

The rest of this paper: Section 2 present literature review, Section 3 report the data and methodology used in this study, the empirical analysis results discussed in section 4, and finally Section 5 report the conclusion of our study.

2. Literature Review

The relationship between development of financial sector and the economic growth firstly presented through work of Schumpeter (1911). He confirmed that the services provided by financial institutions could stimulate technological innovation and economic growth by funding productive investments. In the same line, Robinson (1952); Shaw (1967); Goldsmith (1969); Gurly and Shaw (1973); and Spellman (1982) have contended that financial development could enhance the economic growth by increasing saving, improving the efficiency of allocation fund, and promoting capital accumulation.

Robinson, (1952), and Gurley and Shaw (1960, 1967) reported that financial development promotes the growth of economy. Also, the King and Levine (1993) reported that the development of financial markets mostly follows economic growth rate.

Financial literature was grown in recent years through many empirical studies by examining the role of financial intermediaries on economic growth, and employing many advanced methodologies that have shown the bank credit has positive impact on economic growth. Demetriades and Hussein (1996) examine the direction of causality between economic growth and financing sector development which covered sixteen developing countries, and the results of this study proof that the financing is a major factor in the economic growth.

Kar and Pentecost, (2000) employed VECM beside Graner-Causality test to examine the relation between these two issues, and they found that the causality direction running from financial development to growth of economy.

Baliamoune-Lutz (2008) discusses the relationship between financial development with four economic ratios and real output for the sample which covered three countries from North Africa: Egypt, Algeria, and Morocco for the period span from 1960 to 2001. They employ the methodology of VECM, and Co-integration to inspect the relationship. The results present that the financial development will leads economic growth.

Eatzaz and Malik (2009) investigate role of the of financial development on the growth of economy for the sample which covered thirty five developing countries through using GMM approach, and concluded if the domestic bank credit to the private sector increased this will lead increasing per workers output (productivity of workers) and consequently in the long increasing the economic growth.

Kar et al. (2011) investigate the causal between these two issues in the fifteen countries from MENA markets, and the period span from 1980 to 20007. The study employed the panel causality testing approach, and the results suggest that is no clear cut on causality direction between two variable and different from country to another. Ben Salem and Trabelsi (2012) examine the relationship for the same issue in seven countries from southern Mediterranean countries during the period span from 1970 to 2006. The study applies the Pedroni panel co integration analysis for seven variable measure financial developments. The result of this paper confirms the presence of relationship with a long- rub base between the financial development and the rate of growth.

Depending upon the outcomes of previous literatures review, our contribution or the importance of our study came from many points. Firstly we investigate the relationship between bank credit at the sectoral country level which covered five sectors (agriculture, industry, construction, and tourism) Secondly we employed more Advance econometric techniques for example Vector autoregressive Approach (VAR) Model, and Granger Causality test.

Thirdly our study covered Jordan market which is one of the very important markets in the middle east for a long period span from 1993 to 2014 at quarterly base.

3. Data and Methodology

3.1 Data

Sample period of our study spans from Dec 1993 to Dec 2014, and the study was carried out by using 85 quarterly observations, the time series data taken from Statistical Bulletin of Jordan Central Bank (CBJ).

The data used in this study includes:

1. The Real Gross Domestic Product (RGDP) at current basic price refers to the economic growth as dependent variable.
2. This article uses five independent variables that represent financial development:
   - Total bank credit facilities for all sectors (TBC).
   - Bank credit facilities for agriculture sector (CFA).
   - Bank credit facilities for industry sector (CFI).
   - Bank credit facilities for construction sector (CFC).
   - Bank credit facilities for tourism sector (CFT).

Those five indicators refer to the efficiency of the banking system to generate finance lead to growth.

3.2 Methodology

The previous empirical evidence has agreed upon the existence of a relationship between bank credit and growth of the economy. In order to investigate this relationship we employed several analytical approaches.

Firstly, we will use econometrics methods which are used in the literatures to test the independence of all-time series.

3.2.1 Unit Root Tests

The most popular procedures that developed for testing the order of integration for the time series under consideration, we used two unit root tests :(parametric) the Augmented Dickey-Fuller (1979), and (nonparametric) Phillips-Peron (PP) unit root test (1988). Firstly ADF test is based on the estimation on the following formula:

$$\Delta Y_t = \alpha_0 + \alpha_1 Y_{t-1} + \alpha_2 T + \sum_{i=1}^{n} \beta_i \Delta Y_{t-i} + \gamma_t \tag{1}$$

Where Y_t refer to the time series under study; t= time trend; Δ = first difference operator; γ_t = stationary stochastic process. Phillips and Perron (1987) made a modification for ADF $t-statistic$ with Z_t statistic; the null hypotheses $HO:\alpha_1 = 0$ against $H1:\alpha_1 \neq 0$ this mean a unit root exist:

$$\Delta Y^2{}_t = \delta \Delta Y_{t-1} + \sum_{t=1}^{q} \beta_i \Delta^2 (Y_{t-1}) + \varepsilon_t \tag{2}$$

Where Δ^2 represent the second- difference operator, ε_t represent the stationary stochastic process.ADF and PP tests are applied to last two equations respectively.

3.2.2 Time Series Cointegration

Vector Autoregressive (VAR) model is the estimation method of the Vector Error Correction Model (VECM) is the would be used with k explicative variables to specify the nature of the VECM. This is the second step in this paper to testing the multivariate co-integration between time series in the analyzing process, if the Co integrated variables are disturbed then will not move apart from each other and as a consequence, capture relationship in a long run base relationship. The Johansen (1991, 1988) maximum likelihood test is employ here to examine the cointegration among the variables. The test procedure of the test is follows: Considering the VAR model of order k:

$$Y_t = \alpha + \Delta_1 Y_{t-1} + \ldots\ldots\ldots + \delta_i \Delta Y_{t-1} + \varepsilon_t \tag{3}$$

Y_t refer to 5x 1 vector of the first order integrated variables, ε_t represent innovation vector. The VAR model can be rewrite as follows:

$$\Delta Y_t = \alpha + \lambda Y_{t-1} + \sum_{i-1}^{q-1} \pi_i \Delta Y_{t-1} + \varepsilon_t \tag{4}$$

Where $\Pi = \sum_{i-1}^{q} \Lambda_{t-1}$ and $\lambda_i = -\sum_{J=i+1}^{q} \Lambda_J$

Johansen (1988, 1989) and also Johansen and Juselius (1990) from the residual vectors propose two statistic tests; the trace test (χ trace) the first one to tests the null hypotheses that represent as follows:

$$\lambda_{trac(r)} = -T \sum_{J=i+1}^{N} Ln(1-\lambda_J) \tag{5}$$

Where T refer to the number of observations, and λ_r smallest estimated Eigen values:

3.2.3 Granger Causality Test

In order to examine causal relationship between bank credit and the economic growth is Granger Causality test (Granger, 1986), and The Granger Causality test in the contest of VAR framework formulates:

$$GDP_t = \alpha_0 + \sum_{i=1}^{p} \alpha_{1t} GDP_{t-1} + \sum_{i=1}^{q} \alpha_{2t} TBC_{t-1} + \sum_{i=1}^{m} \alpha_{3t} CFA_{t-1} + \sum_{i-1}^{n} \alpha_{4t} CFI_{t-1} + \sum_{i-1}^{s} \alpha_{5t} CFC_{t-1} + \sum_{i-1}^{t} \alpha_{6t} CFT_{t-1} + \varepsilon_{1t}$$

$$TBC_t = \beta_0 + \sum_{i=1}^{p} \beta_{1t} TBC_{t-1} + \sum_{i=1}^{q} \beta_{2t} GDP_{t-1} + \sum_{i=1}^{m} \beta_{3t} CFA_{t-1} + \sum_{i-1}^{n} \beta_{4t} CFI_{t-1} + \sum_{i-1}^{s} \beta_{5t} CFC_{t-1} + \sum_{i-1}^{t} \beta_{6t} CFT_{t-1} + \varepsilon_{2t}$$

$$CFA_t = \chi_0 + \sum_{i=1}^{p} \chi_{1t} CFA_{t-1} + \sum_{i=1}^{q} \chi_{2t} TBC_{t-1} + \sum_{i=1}^{m} \chi_{3t} GDP_{t-1} + \sum_{i-1}^{n} \chi_{4t} CFI_{t-1} + \sum_{i-1}^{s} \chi_{5t} CFC_{t-1} + \sum_{i-1}^{t} \chi_{6t} CFT_{t-1} + \varepsilon_{3t}$$

$$CFI_t = \delta_0 + \sum_{i=1}^{p} \delta_{1t} CFI_{t-1} + \sum_{i=1}^{q} \delta_{2t} TBC_{t-1} + \sum_{i=1}^{m} \delta_{3t} CFA_{t-1} + \sum_{i-1}^{n} \delta_{4t} GDP_{t-1} + \sum_{i-1}^{s} \delta_{5t} CFC_{t-1} + \sum_{i-1}^{t} \delta_{6t} CFT_{t-1} + \varepsilon_{4t}$$

$$CFC_t = \varepsilon_0 + \sum_{i=1}^{p} \varepsilon_{1t} CFC_{t-1} + \sum_{i=1}^{q} \varepsilon_{2t} TBC_{t-1} + \sum_{i=1}^{m} \varepsilon_{3t} CFA_{t-1} + \sum_{i-1}^{n} \varepsilon_{4t} CFI_{t-1} + \sum_{i-1}^{s} \varepsilon_{5t} GDP_{t-1} + \sum_{i-1}^{t} \varepsilon_{6t} CFT_{t-1} + \varepsilon_{5t}$$

$$CFT_t = \phi_0 + \sum_{i=1}^{p} \phi_{1t} CFT_{t-1} + \sum_{i=1}^{q} \phi_{2t} TBC_{t-1} + \sum_{i=1}^{m} \phi_{3t} CFA_{t-1} + \sum_{i-1}^{n} \phi_{4t} CFI_{t-1} + \sum_{i-1}^{s} \phi_{5t} GDP_{t-1} + \sum_{i-1}^{t} \phi_{6t} GDP_{t-1} + \varepsilon_{6t}$$

The parameters are: $(\alpha_{1t,\ldots,6t}, \beta_{1t,\ldots,6t}, \chi_{1t,\ldots,6t}, \delta_{1t,\ldots,6t}, \varepsilon_{1t,\ldots,6t}, \phi_{1t,\ldots,6t})$.

This test enables us to determine the causality direction existing between the variables of our study, and it may detect the relationship of unidirectional causality, no causality and bidirectional between the variables under investigation. If statistically significant the parameters of the lagged variables. In last 6 equations for the variable of our study it suggests for a causality relationship. Otherwise, no causal relationship.

4. Empirical Results

We started our investigation by checking the stationarity for every individual time series in the study. We employ two unit root tests (ADF), and (PP) tests. The results of thses tests indicate for none of the series in levels can be reject the null hypothesis at 5% level of significance, but for the first differences we reject the null hypothesis at 5% level of significance. We can conclude that all time series for the variables under study of order one, I(1) are integrated.

Table 1. Represent Unit Root tests

Variables	ADF Test		PP Test		Inference
	Level	Difference	Level	Difference	
RGDP	4.19	-8.728*	3.63	-12.08*	I(1)
TBC	1.77	-3..10**	2.31	-5.26**	I(1)
CFA	-0.541	-6.22*	-0.377	-9.316*	I(1)
CFI	1.72	-3.11**	2.29	-5.22*	I(1)
CFC	3.12	-2.98**	3.10	-5.86*	I(1)
CFT	1.28	-4.15*	1.25	-10.23*	I(1)

- *,** refer to the rejection of the null hypothesis at the level of significance 1%, and 5%.

Note: RGDP refer to the real gross domestic product, TBC is Total bank credit facilities for all sectors, CFA is Bank credit facilities for agriculture sector, CFI is Bank credit facilities for industry sector, CFC is Bank credit facilities for construction sector, CFT is Bank credit facilities for tourism sector.

Johansen Co-integration Results

It is well recognized that the sensitivity of Johansen's co integration tests are very high to the option of lag length. In order discover the appropriate lag structure the VAR model is adjusted to the time series data. For those non-stationary variables with the same order are integrated Johansen Co-integration tests can be only utilized, and through our investigation the results confirms that all six variables were found as I(1). In our suggested model dependent variable is RGDP while, TBC, CFA, CFI, CFC, and CFT are independent variables.

In this paper we have three hypotheses according to the Johansen test. "The first null hypothesis declares that there are no cointegration vectors through study variables, the second alternative hypothesis declares that the number of co-integration vectors is less than or equal to one, and the third one hypothesis is that: co-integration vectors are at most two". Batarseh, A. & Ananzeh, I. (2015).

Table 2. Johansen Cointegration tests

Hypothesized No. of CE(s)	Eigen value	Statistic	Critical Value 5%	Prob.**	Max Eigen value	Statistic	Critical Value 1%	Prob.**
None *	0.44	78.44	47.86	0.00	0.44	46.49	27.58	0.00
At most 1 *	0.23	31.95	29.80	0.03	0.23	20.48	21.13	0.06
At most 2	0.11	11.46	15.49	0.18	0.11	8.84	14.26	0.30
At most 3	0.03	2.62	3.84	0.11	0.03	2.62	3.84	0.11
At most 4	0.079	8.20	15.41	0.14	0.079	8.201	20.04	0.14
At most 5	0.018	1 .5123	3.76	0.24	0.018	1 .512	6.65	0.24

Note: *& **: Indicate to the Statistical significance at 5% and 1%, respectively.

According to the co integration results presented in Table 2 stated for the first hypothesis that the trace statistics at alpha 1% are greater than critical value. Therefore at this level we can reject the first null hypothesis that indicates one co-integrating vector at least, and the thus the a long run relationship could be deduced between real RGDP and its independent variables of TBC, CFA, CFI, CFC, and CFT in our country.

Error Correction Model Results

The ECM helping us to recognizing between the long run and short run Granger causality. Long run relationship through the study variables represented by the Error Correction Model.

Table 3 reports the results of level equation and ECM. In our paper we run the test for different lag level until 3 lags, and we can see the short term co-efficient in this table. Short term co-efficient of CFA, CFC, and CFT at α levels are not statistically significant, also short term co-efficient of DS are not statistically significant in general but only at lag 3, short term effect of RGDP, TBC, and CFI are statistically significant at α = 0.05 which means that if TBC increases by 1% , RGDP of Jordan economy increases by 0.10355% in the short term, and if CFI increases by 1%, RGDP of Jordan increases by 0.0812% in the short term.

Date: 12/29/15 Time: 11:33	
Sample(adjusted): 5 85	
Included observations: 81 after adjusting endpoints	
Standard errors & t-statistics in parentheses	
Co integrating Eq:	**CointEq1**
RGDP(-1)	1
TBC(-1)	81.21016
	143.074
	0.56761
CFA(-1)	-1.835978
	-3.21305
	(-0.57141)
CFI(-1)	-78.90173
	-138.274
	(-0.57062)
CFC(-1)	-2.636032
	-4.15661
	(-0.63418)
CFT(-1)	0.618964
	-1.26705
	-0.48851

Error Correction:	D(RGDP)	D(TBC)	D(CFA)	D(CFI)	D(CFC)	D(CFT)
CointEq1	0.052165	0.002604	0.006173	0.002488	0.014435	0.012141
	0.0065	0.00451	-0.01449	0.00439	-0.00526	-0.01533
	8.0312	-0.5773	-0.42587	0.56738	-2.74499	-0.79191
D(RGDP(-1))	-0.839222	0.152753	0.12934	0.107424	0.049815	-0.23623
	-0.09012	0.04258	-0.2011	-0.06085	-0.07297	-0.21272
	(-9.31206)	1.64182	-0.64315	-1.76536	-0.68271	(-1.1154)
D(RGDP(-2))	-0.872768	0.036596	0.110541	0.037635	0.108863	0.042041
	-0.05662	0.03932	-0.12635	0.03823	0.04584	-0.13365
	(-15.4136)	-0.93068	-0.87486	0.98437	-2.37463	-0.31456

D(RGDP(-3))	-0.731945	0.166404	0.221517	0.170556	0.128988	0.101452
	-0.07535	-0.05233	-0.16814	-0.05088	-0.06101	-0.17786
	(-9.71372)	-3.18005	-1.31742	-3.35225	-2.11431	-0.57042
D(TBC(-1))	0.10355	0.870383	-5.06288	1.349612	0.083062	-0.88854
	0.040512	-1.948	-6.25953	-1.89404	-2.27112	-6.62107
	(0.49233)	-0.44681	(-0.8083)	-0.71256	-0.03657	(-0.1340)
D(TBC(-2))	-0.349777	-1.68141	-5.65358	-1.44073	-2.10203	-5.68989
	0.05616	-2.12233	-6.81971	-2.06354	-2.47437	-7.21361
	(0.11445)	(-0.7925)	(-0.8201)	(-0.6918)	(-0.8452)	(-0.7877)
D(TBC(-3))	-2.318673	-0.99943	-1.79876	-0.88006	1.474077	-9.74357
	0.81778	-1.95679	-6.28778	-1.90259	-2.28137	-6.65095
	(0.82287)	(-0.5105)	(-0.2867)	(-0.4626)	-0.64614	(-1.4699)
D(CFA(-1))	0.019312	0.03604	-0.01695	-0.02755	0.048912	0.014093
	(0.07675)	-0.04929	-0.15839	-0.04793	-0.05747	-0.16754
	(0.25162)	(-0.7312)	(-0.1069)	(-0.5740)	-0.85113	-0.08412
D(CFA(-2))	0.081220	0.003409	-0.08603	0.004454	0.013418	0.057682
	(0.07439)	-0.0498	-0.16001	-0.04842	-0.05806	-0.16925
	(1.09175)	-0.06846	(-0.5364)	-0.092	-0.23113	-0.34081
D(CFA(-3))	0.118945	-0.0366	-0.28718	-0.03749	0.034394	-0.00577
	-0.069	-0.04792	-0.15397	-0.04659	-0.05586	-0.16286
	-1.72385	(-0.7638)	(-1.8658)	(-0.8462)	-0.61566	(-0.0355)
D(CFI(-1))	-0.019316	-0.02707	-0.05022	-0.01981	0.01279	0.09459
	0.07675	0.05108	0.16589	0.04942	0.06025	0.17000
	-0.251624	-0.52987	-0.30274	-0.39823	0.20056	0.55562
D(CFI(-2))	0.081210	0.00538	-0.10537	0.00602	-0.01129	0.07938
	0.034390	0.04951	0.16079	0.04821	0.05885	0.16478
	1.0917	0.10867	-0.6554	0.12503	-0.19183	0.48178
D(CFI(-3))	2.051818	1.095246	1.379834	0.961223	-1.48844	9.270503
	-2.83388	-1.96797	-6.3237	-1.91346	-2.29441	-6.68895
	-0.72403	-0.55654	-0.2182	-0.50235	(-0.6483)	-1.38594
D(CFC(-1))	-0.233319	0.066089	-0.3732	0.056927	0.113695	-0.98874
	-0.15329	-0.10645	-0.34207	-0.1035	-0.12411	-0.36182
	(-1.52205)	-0.62083	(-1.0901)	-0.55	-0.91608	(-2.7365)
D(CFC(-2))	0.231486	-0.0241	0.276439	-0.01833	-0.03014	0.116967
	-0.14408	-0.10005	-0.32151	-0.09728	-0.11665	-0.34008
	-1.60666	(-0.2402)	-0.85982	(-0.1881)	(-0.2534)	-0.34394
D(CFC(-3))	0.199628	0.057068	-0.06225	0.0578	0.153599	0.333672

	-0.11723	-0.08141	-0.2616	-0.07916	-0.09491	-0.27671
	-1.70285	-0.70099	(-0.2375)	-0.7302	-1.61828	-1.20587
D(CFT(-1))	0.15245	0.04951	0.033322	0.049366	0.012627	0.015285
	-0.05203	-0.03613	-0.1161	-0.03513	-0.04212	-0.12281
	-2.9301	-1.37028	-0.28701	-1.40522	-0.29976	-0.12446
D(CFT(-2))	0.160638	-0.05353	0.224476	-0.05038	-0.04175	0.108072
	-0.05121	-0.03556	-0.11427	0.03458	-0.04146	-0.12087
	-3.13698	(-1.5058)	-1.96446	(-1.4572)	(-1.0069)	-0.89413
D(CFT(-3))	0.106362	-0.01032	-0.08644	-0.01026	-0.07479	0.209807
	-0.04941	-0.03431	-0.11025	-0.03336	-0.04	-0.11662
	-2.1527	(-0.3062)	(-0.7841)	(-0.3078)	(-1.8695)	-1.79904
R-squared	0.890142	0.443012	0.251553	0.458342	0.545413	0.185282
Adj. R-squared	0.858248	0.281306	0.034263	0.301087	0.413436	-0.05125
Sum sq. resids	0.009759	0.004706	0.048595	0.004449	0.006397	0.054371
S.E. equation	0.012546	0.008713	0.027996	0.008471	0.010158	0.029613
F-statistic	27.9092	2.739609	1.157681	2.914637	4.132635	0.783332
Log likelihood	250.5377	280.0739	185.5224	282.3493	267.6427	180.9741
Akaike AIC	-5.716981	-6.44627	-4.11166	-6.50245	-6.13933	-3.99936
Schwarz SC	-5.15532	-5.88461	-3.55	-5.94079	-5.57767	-3.4377
Mean dependent	0.009802	0.00958	0.006494	0.009531	0.010358	0.014444
S.D. dependent	0.033323	0.010277	0.028489	0.010133	0.013263	0.028883
Determinant Residual Covariance		3.64E-26				
Log Likelihood		1682.663				
Akaike Information Criteria		-38.5843				
Schwarz Criteria		-35.0369				

Table 3 reports that ECT is 5.216 %, positively and statistically significant at level α 1%, figure 0.05216 display that the short run values of RGDP converging to its long run Equilibrium level by 5.216 % adjustment speed every year through the CFA, CFC, and CFT contributions.

We can see from the figures of level Equation when CFA increasing by 0.01, then the GDP increasing by 0.0193% and its statistically significant at $\alpha = 0.10$.

The results of Granger Causality Tests

After the process of analyzing the co-integration and ECM, and our results supports that co-integration vectors found between our study variables. In this time we must applied the Granger Causality Test.

Table 4 reports the outcomes of the test, the outcomes presents that there is a single causality running from CFC to CFA, from CFI to CFA, from CFT to CFA, from CFA to CFT, from RGDP to CFA from TBC to CFA, from CFI to CFC, from RGDP to CFC, from CFC to RGDP, from TBC to CFC, and from TBC to CFI. Also in Table 4, the bidirectional causality observed among variables CFT, CFA, and RGDP, CFC.

Pairwise Granger Causality Tests
Date: 12/29/15 Time: 17:54
Sample: 1 85
Lags: 3

Null Hypoth:	Obs	F-Stat	Prob
CFC doesn't Granger Cause CFA	82	2.8394	0.04357
CFA doesn't Granger Cause CFC		0.4723	0.70247
CFI doesn't Granger Cause CFA	82	3.5131	0.0192
CFA doesn't Granger Cause CFI		2.0487	0.11426
CFT doesn't Granger Cause CFA	82	2.2279	0.09188
CFA doesn't Granger Cause CFT		2.733	0.04961
RGDP doesn't Granger Cause CFA	82	3.2034	0.02797
CFA doesn't Granger Cause RGDP		1.0337	0.38267
TBC doesn't Granger Cause CFA	82	3.4937	0.01966
CFA doesn't Granger Cause TBC		1.7941	0.15557
CFI doesn't Granger Cause CFC	82	2.8818	0.04138
CFC doesn't Granger Cause CFI		1.5488	0.20893
CFT doesn't Granger Cause CFC	82	0.9617	0.4154
CFC doesn't Granger Cause CFT		2.1137	0.10557
RGDP doesn't Granger Cause CFC	82	7.0109	0.00032
CFC doesn't Granger Cause RGDP		2.2266	0.09202
TBC doesn't Granger Cause CFC	82	3.1977	0.02816
CFC doesn't Granger Cause TBC		1.6139	0.19327
CFT doesn't Granger Cause CFI	82	1.901	0.13669
CFI doesn't Granger Cause CFT		2.1034	0.10691
RGDP doesn't Granger Cause CFI	82	1.6004	0.19642
CFI doesn't Granger Cause RGDP		12.724	8.30E-07
TBC doesn't Granger Cause CFI	82	2.5949	0.05872
CFI doesn't Granger Cause TBC		1.9122	0.13485
RGDP doesn't Granger Cause CFT	82	1.2899	0.2841
CFT doesn't Granger Cause RGDP		0.9402	0.42564
TBC doesn't Granger Cause CFT	82	2.0735	0.11087
CFT doesn't Granger Cause TBC		2.0681	0.11159
TBC doesn't Granger Cause RGDP	82	12.283	1.30E-06
RGDP doesn't Granger Cause TBC		1.5568	0.20696

5. Conclusion

The Jordanian economy had suffered from many unstable political events from near country that hampered its growth for several periods from the year of 1990. Over and above of poor provision of infrastructure, especially the financing of different vital sectors could be one of the main factors of slow growth. So that this study came to study the relation between bank credit for different sectors and economic growth through employing different advanced methodologies VECM, and Granger Causality Test, and using quarterly data for the period 1993-2014.

The empirical analysis proposed that variables that determine bank credit for different sectors and RGDP present a unit root. Once a co integrated relationship among relevant economic variables is established. The results of this study report for a long run relationship could be inferred between real RGDP and its Explanatory variables of TBC, CFA, CFI, CFC, and CFT in our country. So we can suggest that TBC, CFA, CFI, CFC, and CFT are in the long term equilibrium relationship with the economic development in Jordan.

The Granger causality test report that causality runs from economic development, measured as bank credit for agriculture and construction sectors in Jordan economy. The results report bidirectional causality observed among economic development and bank credit to construction Overall, the underdevelopment of credit and stock markets with no financial depth remains one of the main obstacles faced this economy.

As a result, banking with different sectors has played a positive role in enhancing the growth of the Jordanian economy. furthermore, more rehabilitation of the financial sector enhance the opportunity for economic growth.

We recommend in this study to bring attention the government of Jordan toward the role of intermediation markets that can reduce financial sector instability that could spoil growth in the future, and we recommend for further study in the future in the same contest.

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