Hicham, Ayad

**Article**

# Financial development and poverty reduction nexus

**Provided in Cooperation with:**
Dimitrie Cantemir Christian University, Bucharest

*Reference:* Hicham, Ayad Financial development and poverty reduction nexus.

**Academic Journal of Economic Studies**
**Vol. 3, No. 2, June 2017, pp. 28–35**
**ISSN 2393-4913, ISSN On-line 2457-5836**

# Financial Development and Poverty Reduction Nexus: A Co-Integration and Causality Analysis in Selected Arabic Countries

**Ayad Hicham**

*Department of economics, University of Tlemcen, Algeria, E-mail: a_hichem210@hotmail.fr*

***Abstract*** *This paper attempts the dynamic causal relationship between poverty reduction measured as consumption per capita and financial development measured as Kaopen and Milesi-Ferreti proxies, trade openness measured measured by the sum of total exports and total imports as a percentage of GDP at 2005 constant prices and economic growth as measured by GDP per capita for 14 selected Arabic countries within the panel co-integration techniques and TYDL Granger causality approach (1996), the results show that the poor people in Arabic countries (the selected countries) did not benefit from liberalization systems and economic growth for the period because both of finance-led poverty and trade-led poverty seem to be rejected. The study, therefore, recommends that policy makers should stop the financial braking and adopt new financial policies that allow reducing poverty rates.*

***Key words*** Poverty, financial development, growth, trade, TYDL

**JEL Codes**: C33, G21, I32

## 1. Introduction

Since Bagehot (1873) and Schumpeter (1911) and then Glodsmith (1969), Mckinnon (1973) and Shaw (1973), the financial development has been considered as an important tool to support economic growth, Schumpeter argued that financial intermediation through the banking system played a pivotal role in economic development by affecting the allocation of savings and thereby improving productivity, technical change and economic growth, for this reason most of developing countries have counted on liberalisation policies of both trade and financial systems, whereas, the results of many studies suggests a significantly impact of financial development on economic growth as King and Levine (1993); Christopoulos and Tsionas (2004); Levine *et al.* (2000) and many others, by returning to Patrick (1966) study, we find two major cases of relationship between economic growth and financial development, the first is when the financial development leading economic growth and it's named the supply-leading hypothesis; and the second is when economic growth inducing financial development and it's named the demand-following hypothesis (Shun *et al.,* 2013), in the other hand many economists as Robinson (1952), Lucas (1988) and Stiglitz (2004) argue that there is no relationship between the two variables, and a few other studies had founded a negligible impact from financial development to economic growth as Andersen and Tarp (2003), Levine (2005) and Ang (2008a), Khan and Senhadji (2003) paper had concluded that financial development affects the economic growth by a very small manner, and they supposed that the relationship between the two variables can be a non-linear relationship.

Fratzscher and Bussiere (2004) from e working paper named **"**Financial openness and growth: short-run gain, long-run pain?**"** declared that economic growth immediately after liberalization is often driven by an investment boom and a surge in portfolio and debt inflows, which then become detrimental to economic growth in the medium-run to long-run, so, such a trade-off may be created by an investment and lending boom immediately after liberalization, which ultimately may turn into a bust and a collapse, resulting in lower growth and possibly recession and financial crises in the medium-run (Mackinnon and Pill, 1997 and 1999), and many other empirical results in the last four decades suggest that financial development enhances economic growth and simultaneously, growth propels financial development (Perez-Moreno, 2011).

Odhiambo (2009) declared that there is no universal consensus on the causal relationship between financial development and economic growth because of the sensitivity to the proxy used for the measurement of financial development, in addition, very few studies have gone the full distance to examine the causal relationship between the financial development and poverty reduction (Dollar and Kraay 2002, Honohan 2004 and Beck *et al.,* 2007), in this area there are three ways promote the financial development to reduce poverty (Gazi *et al*., 2014):

1. Financial development can improve the opportunities for the poor to access formal finance by addressing the causes of financial market failures such as information asymmetry and the high fixed cost of lending to small borrowers (Jalilian and Kirkpatrick, 2001; Stiglitz, 1998).
2. Financial development enables the poor to draw down accumulated savings or to borrow money to start microenterprises, which eventually leads to wider access to financial services, generates more employment and higher incomes and thereby reduces.

3. Financial development may trickle down to the poor through its influence on economic growth. This is because of the implied positive relationship between financial development and economic growth. The trickle-down theory has been widely supported by studies such as Ravallion and Datt (2002), Mellor (1999), Dollar and Kraay (2002) and Fan *et al.* (2000).
The aim of this paper is to examine the links between financial development, economic growth, trade openness and poverty rates in 14 selected Arabic countries using panel data over the period 1980-2014 (Algeria, Bahrain, Egypt, Jordan, Kuwait, Lebanon, Mauritania, Morocco, Oman, Saudi Arabia, Sudan, Syria and Tunisia).

## 2. Literature review

There is a few studies have examined the links between poverty redaction and financial development, Jalilian and Kirkpatrick (2005) examines the contribution of financial development to poverty reduction in developing countries, using a pooled panel data approach with both a time series and cross section dimension included 285 observations covering 42 countries (26 developing and 16 developed countries) to test for a causal process linking financial sector growth and poverty reduction, the empirical results indicate that, up to a threshold level of economic development, financial sector growth contributes to poverty reduction through the growth enhancing effect, the impact of financial development on poverty reduction will be affected, however, by any change in income inequality resulting from financial development, Kappel (2010) examines the effects of financial development on income inequality and poverty in 78 developing and developed countries for the period 1960-2006 using various indicators (Gini coefficient as inequality index, Headcount ratio as poverty index, private credit/GDP, market capitalization/GDP, turnover ratio, joint finance measure, financial access, ethic fractionalization, inflation, secondary enrollment and human development index), the results of both cross-country and panel data regressions suggest that inequality and poverty are reduced not only through enhanced loan markets, but also through more developed stock markets , the results also show that ethnic diversity and the distribution of land are significant and robust determinants of both income inequality and poverty, and there is an evidence that government spending leads to a reduction in income inequality in high income countries, in low income countries, however, there is no significant effect.
Odhiambo (2009) examine the dynamic causal relationship between financial development, economic growth and poverty reduction in South Africa using a trivariate causality model. To answer the question ' Which sector leads in the process of poverty reduction in South Africa—the financial sector or real sector?', using co-integration and error-correction models, the empirical results of this study show that both financial development and economic growth Granger cause poverty reduction, the results also shows that economic growth Granger causes financial development and, therefore, leads in the process of poverty reduction, this applies irrespective of whether the causality test is conducted in the short-run or in the long-run.
Jeanneney and Kpodar (2011) investigates how financial development helps to reduce poverty directly through a distributional effect, beyond its indirect effect through economic growth, the results of this study with data for a sample of developing countries from 1966-2000 suggest that the poor benefit from the ability of the banking system to facilitate transactions and provide savings opportunities (through the McKinnon 'conduit effect') but to some extent fail to reap the benefit from greater availability of credit. Moreover, financial development is accompanied by financial instability, which is particularly detrimental to the poor. Nevertheless, the benefits of financial development for the poor outweigh the cost.
Akhter and Liu (2010) presents an empirical evidence of a direct relationship between financial development and poverty, the empirical modeling employs an efficient panel data estimation technique called fixed effect vector decomposition (FEVD) which is applied to a poverty determination model designed to explain poverty in term of financial development and financial instability. This technique can efficiently estimate time-invariant and rarely changing variable which traditional panel data models cannot to answer the question 'can financial development exert a direct impact on poverty ?' instead of financial enhances growth or growth is good for the poor which well documented in the literature, the findings shows that on average financial development is conducive for poverty reduction but the instability accompanying financial development is detrimental to the poor, this result also holds for both measures of financial development namely the ratio of money to GDP (M3-GDP) and the ratio credit to GDP.
Perez-Moreno 2011 examines the causal links between financial development and poverty in developing countries applying a modified form of traditional Granger causality tests to suit the short times series that are used in this paper for 35 developing countries for the years 1970, 1980, 1990 and 1998 using the poverty data estimated by Sala-i-Martin (2002) and financial development data from World Development Indicators and Beck et al (2000) updated in 2007 which are two proxies (M3/GDP: the liquid assets of the financial system (currency plus demand and interest-bearing liabilities of banks and non banks) as a share of gross domestic product; and Private credit/GDP: the value of credits granted by financial intermediaries to the private sector as a share of GDP (credit to private firms and households from banks and nonbank financial intermediaries)), the results conclude that the evidence supports the hypothesis that in the period of the 1970s–1980s financial development, measured by liquid assets of the financial system as a share of GDP or by money and quasi money as a percentage of GDP, leads to the reduction of moderate poverty, these results do not appear for the period of the 1980s–1990s or when financial development is measured by the ratio of the value of credits granted by financial

intermediaries to the private sector to GDP, whereas they seem to be strengthened by using summary measures of financial development. Likewise, and the results does not show any evidence of Granger causality from poverty to financial development.

Fowowe and Adiboye (2012) examines the effect of financial development as measured by private credit on the growth of poverty and inequality in Sub-Saharan African countries, the empirical results indicate that this measure of financial development does not significantly influence poverty in these countries. However, macroeconomic variables such as low inflation and trade openness can help reduce the level of poverty. Khan *et al*. (2012) reinvestigate the impact of financial development on poverty reduction using various indicators of financial development as broad money supply (M2), domestic credit to the private sector and domestic money bank assets, by applying an ARDL bounds testing approach to co-integration for long run relationship between the variables and error correction method (ECM) is used to examine short run dynamics impact of financial development on poverty, the results are sensitive to the use of methodology and proxy of financial development but overall results suggest that financial development reduces poverty. Gazi *et al*. (2014) contributes to the literature by investigating the relationship between financial development, economic growth and poverty reduction in Bangladesh using quarter frequency data over the period 1975–2011, using an innovative empirical approach based on ARDL co-integration with structural breaks, the findings show that a long-run relationship between financial development, economic growth and poverty reduction exists in Bangladesh and financial development helps to reduce poverty, but its effect is not linear.

## 3. Methodology of research

### 3.1. Data

The present research work has carried out the links between financial development and poverty rates in addition to economic growth and trade openness; we are led to resort to panel data from 14 Arabic countries over the period 1980-2014 by using the following proxies for both poverty and financial development:

#### 3.1.1. Poverty

Data on poverty in most of the developing countries are very limited because they have started recording data on poverty in the 90s, and to override this lack, many indicators have been proposed, for example the Deininger and Squire (1996) database or Lundberg and Squire 1998 database, this two databases reckon on income and headcount data from the poor people, many others have used the annual income per capita and others used the rate of population living under 1 or 2$ per day, but on the other side, many recent studies have shown that the measure of poverty by the consumption per capita is more efficacy than income see for Ravallion (1992), Woolard and Leibbrandt (1999), Quartey (2005), Wicholasand Odhiambo (2009) and Dhrifi (2013).

#### 3.1.2. Financial development

We use in this paper two different proxies from the empirical literature that suggested various indicators of financial development where we find three types of measures, the first one is the de jure measures based on AREAER (IMF's Annual Report on Exchange Arrangements and Exchange Restrictions) by converting qualitative information in to a quantitative databases, most important indicator used de jure measures is the index developed by Chinn and Ito (2006) named henceforth KAOPEN, and the second type is the facto measures that are the main alternative to the de jure measures, where it captures information on financial integration that is distinct from that contained in the de jure indicators, in this case researchers specifically interested in FDI (Foreign Direct Investment) flows, the third one is the is the hybrid indicators that are another alternative, one if the drawbacks is that information about financial globalization is only part of eGlobe (trade information accounts for 50% of the index components) (Dreher, 2006), however it does provide information that is distinct from others (Quinn *et al*., 2011).

The Kaopen index is the first index in our paper, this index based on binary dummy variables reflecting the restrictions on external accounts, the Kaopen index components four variables (k1, k2, k3 and k4), where the k1 represents the information on the existence of multiple exchange rates, k2 and k3 are the information on the transactions in the current and capital account, and the k4 is the information of the requirement of the surrender of export proceeds, when the Kaopen index takes high values it means that the country is open to capital flows, and k3 calculates as follows:

$$\text{SHARE } k_{3,t} = K_{3,t} + K_{3,t-1} + K_{3,t-2} + K_{3,t-3} + K_{3,t-4} /5 \quad (1)$$

The second measure is the ratio gives by Lane and Milesi-Ferreti (2006) based on panel data of 147 countries, it is calculated as the ratio of the sum of total external liabilities and total external assets to GPD, a high level of this proxy means more capital mobility in the economy.

MF index = Total external liabilities + total external assets/GDP (2)

3.1.3. Trade openness

Measured by the sum of total exports and total imports as a percentage of GDP at 2005 constant prices.

3.1.4. Economic growth

Measured by GDP per capita.

3.2. Model specification

3.2.1. Panel Co-integration

The first one who introduce the concept of spurious or nonsense correlations was Udne in 1926, but before the 1987 all economists were using the linear regressions on the non-stationary series, but this regressions as declared by the Nobel laureate Clive Granger and Paul Newbold are dangerous and could produce spurious regressions.

3.2.1.1. Kao co-integration test

The same basic approach in Pedroni test is follows by Kao test but with specifies cross sections specific intercepts and homogeneous coefficients on the first stage regressors, Kao (1999) had used a bivariate model as follows:

$$y_{i,t} = \alpha_i + \beta_i x_{i,t} + e_{i,t}$$
$$y_{i,t} = y_{i,t-1} + \mu_{i,t} \quad (3)$$
$$x_{i,t} = x_{i,t-1} + \varepsilon_{i,t}$$
for: t=1,…,T ; i=1,…,N.

3.2.1.2. Fisher co-integration test

This test developed by Maddala and Wu (1999) is based on Fisher (1932) test that uses the results of the individual independent tests by combining the tests from each individual cross sections to get a test statistic for the full model, if $\Omega_i$ is the p-value from and individual co-integration test for cross section i, the null hypothesis for the full panel is:

$$-2 \sum_{i=1}^{N}. \log(\Omega_i) \longrightarrow \chi^2 2N \quad (4)$$

$\chi^2$ is based on Mackinnon-Haug-Michelis (1999) p-value for Johansen co-integration trace and maximum eigenvalue tests.

3.2.2. Toda-Yamamoto Granger causality (1995)

Toda and Yamamoto (1995) and Dolado and Lutkepohl (1996) developed a new procedure of Granger causality based on an augmented VAR modeling by introducing a modified Wald tests (MWald) statistique, and it can be applied with all the integration series types I(0), I(1) and I(2) for both non co-integrated or co-integrated variables, the TYDL (Toda, Yamamoto, Dolado and Lutkepohl) procedure composes from four steps, the first step is to find the maximum order of integration between the variables $d_{max}$ where is the higher order of integration, the second step is to determine the optimal lag order (K) of VAR model in levels as usually choosed by Akaike information criterion (AIC), schawrz information criterion (SIC), Hannan-Quin information criterion (HQ), the final prediction error (FPE) and the sequential modified LR test statistique (LR), the third step is to estimate the VAR model (VAR(K+$d_{max}$)) as follows:

$$KO_{it}=\alpha_{1it} + \sum_{i=1}^{h+d}.\beta_{1it}\, KO_{it-i} + \sum_{j=1}^{l+d}.\, y_{1it}\, FO_{it-j} + \sum_{k=1}^{c+d}.\, \Delta_{1it}\, TO_{it-k} + \sum_{W=1}^{V+d}.\, \xi_{1it}\, GDP_{it-W} + \sum_{z=1}^{x+d}.\, \Omega_{1it}\, POV_{it-z} + \varepsilon_{1it} \quad (5)$$

$$FO_{it}=\alpha_{2it} + \sum_{j=1}^{l+d}.\, y_{2it}\, FO_{it-j} + \sum_{i=1}^{h+d}.\, \beta_{2it}\, KP_{it-i} + \sum_{k=1}^{c+d}.\, \Delta_{2it}\, TO_{it-k} + + \sum_{W=1}^{V+d}.\, \xi_{2it}\, GDP_{it-W} + \sum_{z=1}^{x+d}.\, \Omega_{2it}\, POV_{it-z} + \varepsilon_{2it} \quad (6)$$

$$TO_{it}=\alpha_{3it} + \sum_{k=1}^{c+d}.\, \Delta_{3it}\, TO_{it-j} + \sum_{i=1}^{h+d}.\, \beta_{3it}\, KP_{it-i} + \sum_{j=1}^{l+d}.\, y_{3it}\, FO_{it-j} + + \sum_{W=1}^{V+d}.\, \xi_{3it}\, GDP_{it-W} + \sum_{z=1}^{x+d}.\, \Omega_{3it}\, POV_{it-z} + \varepsilon_{3it} \quad (7)$$

$$GDP_{it}=\alpha_{4it} + \sum_{W=1}^{V+d}.\, \xi_{4it}\, GDP_{it-W} + \sum_{k=1}^{c+d}.\, \Delta_{4it}\, TO_{it-j} + \sum_{i=1}^{h+d}.\, \beta_{4it}\, KP_{it-i} + \sum_{j=1}^{l+d}.\, y_{4it}\, FO_{it-j} + \sum_{z=1}^{x+d}.\, \Omega_{4it}\, POV_{it-z} + \varepsilon_{4it} \quad (8)$$

$$POV_{it}=\alpha_{5it} + \sum_{z=1}^{x+d}.\, \Omega_{5it}\, POV_{it-z} + \sum_{W=1}^{V+d}.\, \xi_{5it}\, GDP_{it-W} + \sum_{k=1}^{c+d}.\, \Delta_{5it}\, TO_{it-j} + \sum_{i=1}^{h+d}.\, \beta_{5it}\, KP_{it-i} + \sum_{j=1}^{l+d}.\, y_{5it}\, FO_{it-j} + \varepsilon_{5it} \quad (9)$$

Where d is the maximal order of integration order of the variables in the system, h, l, c, v and x are the optimal lag length of $KO_{it}$, $FO_{it}$, $TO_{it}$, $POV_{it}$ and $GDP_{it}$, $\varepsilon_{1it}$, $\varepsilon_{2it}$, $\varepsilon_{3it}$, $\varepsilon_{4it}$ and $\varepsilon_{5it}$ are error terms and are assumed to be white noise with zero mean constant variance and no autocorrelation.
KO: is the Kaopen index for the financial openness; FO: is the Lane and Milesi-Ferreti index for the financial openness.
TO: is the trade openness index; GDP: is the GDP per capita; POV: is the poverty rate.

## 4. Results

4.1. Unit root test results

*Table 1*. Unit root tests results

| | Null: Unit root (assumes common unit root process) | | Null: Unit root (assumes individual unit root process) | | |
|---|---|---|---|---|---|
| Variables | LLC | BRE | IPS | MW-ADF | MW-PP |
| KO | -0.675<br>(0.249) | -0.931<br>(0.175) | -0.376<br>(0.353) | 29.078<br>(0.217) | 41.970<br>(0.013) |
| FO | -0.314<br>(0.376) | -0.654<br>(0.256) | -0.951<br>(0.170) | 35.538<br>(0.154) | 33.778<br>(0.208) |
| TO | 1.518<br>(0.935) | 2.767<br>(0.997) | -0.291<br>(0.385) | 34.721<br>(0.178) | 31.199<br>(0.308) |
| GDP | 2.325<br>(0.990 | 7.289<br>(1.000) | 2.467<br>(0.993) | 15.749<br>(0.969) | 8.262<br>(0.999) |
| POV | -2.316<br>(0.010)* | -0.266<br>(0.394) | -1.347<br>(0.088) | 40.102<br>(0.064) | 44.095<br>(0.027)* |
| D(KO) | -3.774<br>(0.000)* | -5.838<br>(0.000)* | -6.010<br>(0.000)* | 82.756<br>(0.000)* | 680.711<br>(0.000)* |
| D(FO) | -6.928<br>(0.000)* | -4.735<br>(0.000)* | -8.180<br>(0.000)* | 115.581<br>(0.000)* | 239.218<br>(0.000)* |
| D(TO) | -1.513<br>(0.065) | 1.622<br>(0.947) | -5.798<br>(0.000)* | 97.801<br>(0.000)* | 158.320<br>(0.000)* |
| D(GDP) | 3.770<br>(0.999) | 6.626<br>(1.000) | -3.082<br>(0.000)* | 69.955<br>(0.000)* | 139.556<br>(0.000)* |
| D(POV) | -6.542<br>(0.000)* | -5.406<br>(0.000)* | -8.354<br>(0.000)* | 125.603<br>(0.000)* | 716.164<br>(0.000)* |

D: Denote first difference.
()*:Denote significant at 5% level

Table 1 presents the summary of the unit root test results for the five series at both their levels and first differences, the results indicates that all the variables were non-stationary at their levels, so we conclude that all the variables are stationary at the first difference I(1), this means that $d_{max}$= 1.

4.2. Co-integration test

*Table 2*. Kao and Fisher co-integration results

| Kao co-integration test | | | | |
|---|---|---|---|---|
| ADF | 4.282 | 0.000** | | |
| Fisher co-integration test | | | | |
| Hypothesized | Fisher Stat.* | | Fisher Stat.* | |
| No. of CE(s) | (trace test) | Prob. | (max-eigen test) | Prob. |
| None | 224.1 | 0.000 | 159.6 | 0.000** |
| At most 1 | 136.3 | 0.000 | 103.8 | 0.000** |
| At most 2 | 55.19 | 0.000 | 50.51 | 0.001** |
| At most 3 | 24.13 | 0.454 | 22.83 | 0.530 |
| At most 4 | 25.07 | 0.407 | 25.07 | 0.401 |

**: Denote the rejection of null hypothesis (no co-integration)

From table 2, the results inspired is that both of Kao and Fisher co-integration tests indicate that there is a co-integration and long-run relationship among the variables, and the Fisher test shows that there is three co-integration vectors, and from table 3 in we conclude that this relation is available for all the individual cross section.

*Table 3.* individual cross section co-integration results

| Hypothesized | Fisher Stat.* | | Fisher Stat.* | |
|---|---|---|---|---|
| No. of CE(s) | (trace test) | Prob. | (max-eigen test) | Prob. |
| None | 71.7527 | 0.0348 | 39.0726 | 0.0110 |
| Bahrain | 90.0642 | 0.0005 | 34.5247 | 0.0418 |
| Jordan | 70.8686 | 0.0412 | 46.4460 | 0.0010 |
| Kuwait | 195.8562 | 0.0000 | 86.0585 | 0.0000 |
| Lebanon | 84.4416 | 0.0022 | 43.0609 | 0.0031 |
| Oman | 97.3647 | 0.0016 | 44.0364 | 0.0029 |
| Qatar | 93.3236 | 0.0002 | 35.9766 | 0.0277 |
| Saudi Arabia | 84.3256 | 0.0000 | 31.2364 | 0.0000 |
| Syria | 86.5305 | 0.0013 | 35.9112 | 0.0282 |
| Egypt | 77.7084 | 0.0102 | 28.1193 | 0.2081 |
| Algeria | 114.3015 | 0.0000 | 46.3767 | 0.0010 |
| Mauritania | 187.4680 | 0.0000 | 116.0708 | 0.0000 |
| Morocco | 75.1200 | 0.0177 | 36.9229 | 0.0210 |
| Sudan | 70.2668 | 0.0025 | 36.3971 | 0.0193 |
| Tunisia | 71.7527 | 0.0348 | 39.0726 | 0.0110 |

4.3. TYDL Granger causality test

The next step in our work is to test the causality relationship between the five variables, and as the variables are co-integrated we can't apply the traditional Granger causality (1969) and we must apply the TYDL approach, we know that $d_{max}$= 1 (from unit root tests), the second step is to determine the K factor (the optimum lag length) chosen by AIC, LR, FPE, SC and HQ, table 4 shows that the optimum lag length is 1 (K=1) out of maximum of 8 lags.

*Table 4.* Lag length selection

| Lag | LogL | LR | FPE | AIC | SC | HQ |
|---|---|---|---|---|---|---|
| 0 | -3817.844 | NA | 4.89e+11 | 41.10585 | 41.19256 | 41.14099 |
| 1 | -2538.414 | 2476.316 | 678799.8* | 27.61735* | 28.13764* | 27.82819* |
| 2 | -2513.838 | 46.24608 | 682292.9 | 27.62191 | 28.57576 | 28.00845 |
| 3 | -2489.889 | 43.77745 | 691043.1 | 27.63321 | 29.02063 | 28.19545 |
| 4 | -2477.087 | 22.71300 | 790027.6 | 27.76437 | 29.58536 | 28.50231 |
| 5 | -2452.680 | 41.99020 | 798571.8 | 27.77075 | 30.02531 | 28.68438 |
| 6 | -2438.550 | 23.54949 | 903423.6 | 27.88764 | 30.57576 | 28.97697 |
| 7 | -2424.251 | 23.06314 | 1022787. | 28.00270 | 31.12439 | 29.26773 |
| 8 | -2397.315 | 41.99685* | 1013864. | 27.98188 | 31.53714 | 29.42261 |

* indicates lag order selected by the criterion
LR: sequential modified LR test statistic (each test at 5% level)
FPE: Final prediction error
AIC: Akaike information criterion
SC: Schwarz information criterion
HQ: Hannan-Quinn information criterion

To test the causalities in our model using TYDL approach we estimate at first the VAR(2) model (2: K=1 + $d_{max}$ =1), its clear from table 5 that there is no evidence for any causal relationship between the five variables because all the probabilities are greater than 5%, so we conclude that financial development, economic growth and trade openness useless to reduce poverty rates in our selected Arabic countries and poor people do not benefit from both the liberalization system (financial or trade) and economic growth, and the results shows that both of demand-following and supply-leading hypothesis seems to be reject and the same thing with trade-led growth.

*Table 5*. TYDL Granger causality results

| Excluded | Chi-sq | df | Prob. |
|---|---|---|---|
| KAP | 0.020704 | 1 | 0.8856 |
| MIL | 0.114979 | 1 | 0.7345 |
| POV | 2.327974 | 1 | 0.1271 |
| TRA | 1.491519 | 1 | 0.2220 |
| All | 3.758385 | 4 | 0.4397 |
| Dependent variable: KAP | | | |
| Excluded | Chi-sq | df | Prob. |
| GRW | 0.033986 | 1 | 0.8537 |
| MIL | 0.086093 | 1 | 0.7692 |
| POV | 1.459433 | 1 | 0.2270 |
| TRA | 0.404027 | 1 | 0.5250 |
| All | 2.081690 | 4 | 0.7207 |
| Dependent variable: MIL | | | |
| Excluded | Chi-sq | df | Prob. |
| GRW | 0.135344 | 1 | 0.7130 |
| KAP | 0.693487 | 1 | 0.4050 |
| POV | 1.113739 | 1 | 0.2913 |
| TRA | 0.007847 | 1 | 0.9294 |
| All | 1.861885 | 4 | 0.7611 |
| Dependent variable: POV | | | |
| Excluded | Chi-sq | df | Prob. |
| GRW | 0.012738 | 1 | 0.9101 |
| KAP | 1.633910 | 1 | 0.1313 |
| MIL | 0.824695 | 1 | 0.3638 |
| TRA | 0.261022 | 1 | 0.6094 |
| All | 5.531382 | 4 | 0.2370 |
| Dependent variable: TRA | | | |
| Excluded | Chi-sq | df | Prob. |
| GRW | 1.835242 | 1 | 0.1755 |
| KAP | 0.112194 | 1 | 0.7377 |
| MIL | 0.004801 | 1 | 0.9448 |
| POV | 1.161307 | 1 | 0.1231 |
| All | 5.806670 | 4 | 0.2141 |

## 5. Conclusions

This study explored the relationship between financial development, economic growth, trade openness and poverty reduction in case of 14 selected countries for the period 1980-2014, using two different proxies for financial development (Kaopen and Lane and Milesi-Ferreti) and the consumption per capita as a proxy for poverty rate, the long-run relationship between the variables was examined by applying Kao and Fisher Panel tests, and the TYDL (Toda, Yamamoto, Dolado and Lutkepohl) Granger causality to test the direction of the causalities among the variables.

Our results show that the variables are co-integrated over the long-run term both for Kao and Fisher test, and this relation is available for all the 14 Arabic countries as individual cross section, the causality analysis reveals that Arabic liberalization (financial or trade) is useless to reduce poverty rates and to improve the conditions for poor life, however, we show that the demand-following, supply-leading and trade-led growth hypothesis are rejected, so despite all the liberalization efforts in Arabic countries still very limited and useless to reduce poverty rates, finally we hope our research will invite the Arabic countries to encourage the institutions to adopt new policies allow to commercial banks to provide percentages of loans that will be helpful for reducing poverty rates by create employment opportunities, and as pointed by Honohan and Beck (2007) the financial system should be 'a distributed architecture, with larger institutions such as banks, MFI-network umbrella organizations, or the post office taking the contract and subcontracting parts of it to rural agencies, including MFIs'.

## References

Akhter, S., Liu, Y., and Daly, K. (2009). "Cross country evidence on the linkages between financial development and poverty". International Journal of Business and Management, 5(1), 3.

Andersen, T. B., and Tarp, F. (2003). "Financial liberalization, financial development and economic growth in LDCs". Journal of international development, 15(2), 189-209.

Breitung, J., and Meyer, W. (1994). "Testing for unit roots in panel data: are wages on different bargaining levels cointegrated?". Applied economics, 26(4), 353-361.

Bussière, M., Fratzscher, M., and Müller, G. J. (2004). "Current account dynamics in OECD and EU acceding countries-an intertemporal approach".

Chinn, M.D., and Ito, H. (2006). "What matters for financial development? Capital controls, institutions, and interactions". Journal of development economics,81(1), 163-192.

Christopoulos, D.K., and Tsionas, E.G. (2004). "Financial development and economic growth: evidence from panel unit root and cointegration tests". Journal of development Economics, 73(1), 55-74.

Deininger K, Squire L (1996). "A new Data Set Measuring Income Inequality". The World Bank Economic Review. Washington DC,10(3), 565-591.

Dolado, J. J., and Lütkepohl, H. (1996). "Making Wald tests work for cointegrated VAR systems". Econometric Reviews, 15(4), 369-386.

Dreher, A. (2006). "Does globalization affect growth? Evidence from a new index of globalization". Applied Economics, 38(10), 1091-1110.

Fowowe, B., and Abidoye, B. (2012). "A quantitative assessment of the effect of financial development on poverty in African countries". Department of Economics, University of Ibadan, Nigeria.

Hicham, A. and Belmokaddem, M. (2017). "Financial development, trade openness and economic growth in MENA countries: TYDL panel causality approach". Theoretical and Applied Economics, 22(1 (610), Spring), 233-246.

Hichem, A. (2016). "Poverty, Inequality And Economic Growth In Algeria: An Ardl Approach". Journal of Social and Economic Statistics, 5(1), 1-20.

Jalilian, H., and Kirkpatrick, C. (2005). "Does financial development contribute to poverty reduction?". Journal of Development Studies, 41(4), 636-656.

Jeanneney, S.G., and Kpodar, K. (2011)." Financial development and poverty reduction: Can there be a benefit without a cost?". The Journal of development studies, 47(1), 143-163.

Kao, C. (1999). "Spurious regression and residual-based tests for cointegration in panel data". Journal of econometrics, 90(1), 1-44.

Kappel, V. (2010). The effects of financial development on income inequality and poverty.

Khan, A.D., Ahmad, I., and Jan, W.U. (2012). "Financial development and poverty alleviation: time series evidence from Pakistan". World Applied Sciences Journal, 18, 1576-1581.

Khan, M.S., and Senhadji, A.S. (2003)." Financial development and economic growth: A review and new evidence". Journal of African Economies, 12(suppl 2), ii89-ii110.

King, R.G., and Levine, R. (1993). "Finance, entrepreneurship and growth". Journal of Monetary economics, 32(3), 513-542.

Lane, P.R., and Milesi-Ferretti, G.M. (2006). "The external wealth of nations mark II: Revised and extended estimates of foreign assets and liabilities", 1970-2004.

Levine, R. (2005). "Finance and growth: theory and evidence". Handbook of economic growth, 1, 865-934.

Maddala, G.S., and Wu, S. (1999). "A comparative study of unit root tests with panel data and a new simple test". Oxford Bulletin of Economics and statistics,61(S1), 631-652.

Odhiambo, N.M. (2009). "Finance-growth-poverty nexus in South Africa: A dynamic causality linkage". The Journal of Socio-Economics, 38(2), 320-325.

Patrick, H.T. (1966). "Financial development and economic growth in underdeveloped countries". Economic development and Cultural change, 14(2), 174-189.

Pedroni, P. (1999). "Critical values for cointegration tests in heterogeneous panels with multiple regressors". Oxford Bulletin of Economics and statistics,61(s 1), 653-670.

Perez-Moreno, S. (2011). "Financial development and poverty in developing countries: a causal analysis". Empirical Economics, 41(1), 57-80.

Toda, H.Y., and Yamamoto, T. (1995). "Statistical inference in vector autoregressions with possibly integrated processes". Journal of econometrics,66(1), 225-250.

Uddin, G.S., Shahbaz, M., Arouri, M., and Teulon, F. (2014). "Financial development and poverty reduction nexus: A cointegration and causality analysis in Bangladesh". Economic Modelling, 36, 405-412.