

Trade openness-financial development nexus: Bounds testing approach and causality tests for Tunisia

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This paper addresses the issue of causal relationships between trade openness and financial development in Tunisia over the period 1973-2013. We used the Autoregressive Distributed Lag method considering the ratio of Liquid liabilities, Private credit and Stock market capitalization as financial development indicators (all per cent of GDP). The sum of export and import as a percentage of GDP is the measurement of trade openness.

Our estimates imply that the long and short-run relationships are different. At long run, trade openness is stimulated by liquid liabilities level while it is negatively affected by the level of private credit and the stock market capitalization. In contrast, the main short-run responses of financial development and openness to international trade are not significant. Moreover, the results reveal a bi-directional causality between private credit and trade openness but a direct unidirectional causality running from financial intermediaries' ability to mobilize funds, the size of stock market and trade openness in Tunisia.

The policy implications of this study appeared clear. The overcoming of the institutional weaknesses and the establishment of transparent rules are likely to improve the efficiency of the banking sector and the stock market and so to strengthen the foreign trade in Tunisia.

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Introduction

Several studies focus on relationships between financial development, trade openness and economic growth. However, until recently, the empirical linkages between trade liberalization and financial development have not received sufficient attention in the literature (Kar et al, 2014).

Nevertheless, the idea of an “optimal” level of financial development for an economy is currently highlighted (Beck et al, 2008; Beck and Feyen, 2013 among others). So, researches of factors which influence financial development are increasingly attractive.

Studies interested in the link between trade openness and financial development put out mixed conclusions. On the one hand, the openness-finance nexus relationship is demonstrated (e.g. Svaleryd and Vlachos, 2002; Huang and Temple, 2005, Tayebi and al, 2012). On the other hand, Dritsakis and Adamopoulos (2004), Asongu (2010), David et al (2014)² have not detected any causality evidence between trade openness and financial development.

Few empirical works have been carried out in the case of a specific country since cross-country and panel data studies have been dominant in the empirical literature of relationships between openness and financial development. Further, as argued by David et al (2014), the coverage of African countries in this topic is limit.

In Tunisia, steps towards financial and trade liberalization have been taken since the Structural Adjustment Program (SAP) in 1986. In

² David et al (2014) investigate linkages between financial and trade openness and financial development in 34 Sub-Saharan African (SSA) countries covering a period of 1970–2009. After the control for GDP per capita and inflation, no general direct robust link between trade and capital account openness and financial development is noted.

addition, Tunisia has chosen to substantially open up its economy. Even after the Tunisian revolution in the early 2011, the trade (%GDP) remains high (103% in 2013).

So, in this paper, we targeted to examine the linkages between foreign trade and financial deepening in the Tunisian case. The goal of this paper is to investigate whether trade openness is a crucial step to enhance financial development and/or vice versa for the period 1973-2013. We used the Autoregressive Distributed Lag method considering the ratio of Liquid liabilities, Private credit and Stock market capitalization as financial development indicators (all per cent of GDP). The sum of export and import as a percentage of GDP is the measurement of trade openness. This empirical research may deepen our understanding of policy openness effectiveness and financial development in Tunisia and should help to craft sound policies for greater economic growth.

The novelty of this study is two-fold. (1) To the best of our knowledge, this is the first study focusing on trade openness-financial development nexus in Tunisia. (2) This paper employs ARDL methodology suggested by Pesaran et al. (2001) for testing the impact of globalization on financial development and/or vice versa for an example of low and middle income countries³.

The rest of this paper is organized as follows: Section 2 presents a short literature review. Section 3 analyses trade openness and financial development in Tunisia. In section 4, we display the empirical analysis. The discussion of results is carried out in section 5. Section 6 finally offers some conclusions and policy recommendations.

³ As suggested by Kim et al (2010), the finance long-run effect on trade is higher in less financially developed countries than in more developed countries.

2. Literature review

Many papers have explored relationships between trade openness and financial development.

Greater financial development level increases country openness (e.g. Beck, 2002; Becker and Greenberg, 2005; Altaee et Al-Jafari, 2015⁴). Likewise, using monthly data for the period 1989- 2007, Kar et al (2014) concluded to uni-directional causality from trade openness to financial development in Turkey. Finance and openness relationships may present a bi-directional causality (Gries et al, 2009)⁵.

The financial development and trade openness interact through many channels. Most works state indirect linkage notably through economic development⁶.

Rajan and Zingales (2003) emphasized the role of the supply-side factors. In fact, trade is able to weakening the incumbents' powers to block financial development since more firms are able to benefit from the opening. Rajan and Zingales (2003) argued that special interest groups (incumbents) preclude to financial development since they vested interest in a closed financial sector and oppose the financial market development.

Furthermore, the channel through which trade and financial development interact is based on demand-side factors. In their theoretical work, Blackburn and Hung (1998) showed that more trade increases the number of new producers who need to finance their activities which in return spurs financial development. In another

⁴ Using Vector Autoregressive technique, the empirical study of Saaed and Hussain (2015) asserts that money supply is the only instrument of financial development that seems to cause trade openness in Kuwait for the period 1977-2012.

⁵ Kim et al (2011) conclude to a "two-way causal relationship" between financial development and trade openness for a panel of 70 countries over the period 1960–2007.

⁶ Ginebri et. al. (2001) are among few researchers emphasizing direct relationship between trade openness and financial development: trade liberalization enhances entrepreneurial development and so increases the occurrence new financial instruments.

perspective, Do and Levchenko (2004) found that trade openness affects the demand for external finance. This induces the financial depth in wealthy countries. Conversely, they argued that in poor countries which import financially intensive goods, a higher trade might slow financial development. Besides, a more trade openness leads to a demand for new financial products such as instruments for trade finance and risk hedging (Svaleryd and Vlachos, 2002).

Countries with relatively developed financial systems are likely to promote export industries that are highly reliant on finance (Svaleryd and Vlachos, 2005). Likewise, financial development level affects the balance structure (Beck, 2002). A relatively high level of financial development is associated with exporting manufacturing-goods. Hence, financial development is an important determinant of export performance (Becker and Greenberg, 2005).

Overall, increasing trade openness is expected to have a positive impact on financial development. It leads to efficiency effects follow-on internal and external scale economics benefits, reduces rent seeking (Lee, 1993), promotes competition, threatens the incumbent's vested interests (Rajan and Zingales, 2003), provides accessibility to international capital markets, develops market discipline as well as creates new demand for external finance (Do and Levchenko, 2004).

Nevertheless, trade can foster financial development and/or vice under many conditions. Trade must be associated with financial openness (Rajan and Zingales⁷, 2003; Baltagi et al, 2009). In same vein, Fukuda (2014) found that while the single impact of either trade or financial openness is uncertain, the simultaneous opening of both contributes to financial development. David et al (2014) demonstrated that trade openness is more important for financial development in Sub-Saharan African countries with better institutional quality since

⁷ Their empirical evidence for a sample of twenty-four countries during 1913–1999 shows that when an economy opens up to trade while its capital account is closed (trade openness without financial openness), this is unlikely to deliver any financial development.

more openness might increase vulnerabilities to shocks in an environment of weak supervision.

3. Experiencing Openness and Financial Development in Tunisia

3.1. Trade Openness in Tunisia

In the seventies, Tunisian authorities practiced favor tariff exemption for import of machinery and equipment. The aim was to develop the Tunisian industry notably manufacturing. But, the severe crisis in 1986 made Tunisia adopt an IMF Structural Adjustment Program focusing on liberalization policies. In this context, many reforms in favor of gradual liberalism were applied such as investment liberalization, public firms' restructuring, tax reforms, trade liberation by removing import and export licenses and establishing bilateral/multilateral trade agreements. Tunisia has signed agreements with General Agreement on Tariffs and Trade (GATT) in 1990 and the Agreement on World Trade Organization (WTO) in 1995⁸. In the late of 1990s, Tunisia strengthened its integration in the international economy considering the foreign trade as an engine of economic growth (African Development Bank Group Report, 2014). However, the main measure was the Association Agreement with European Union signed in 1995. The trade barriers had dropped gradually for industrial goods and others to disappear on January 2008⁹.

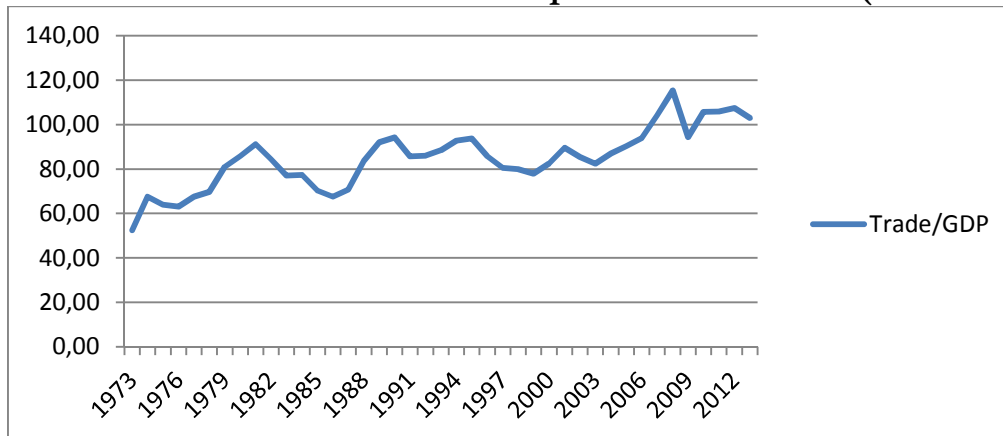
In the trade policy, we have noted a switch from import substitution policies to export promotion. Previously, the tariffs were the key instrument of trade policy to create protective environment for industrialization. Conversely, the new trade policy has tried to reduce anti-export bias and promote export processing zones stimulated by

⁸Furthermore, Tunisia is a member of the Multilateral Investment Guarantee Agency (MIGA). The country has concluded bilateral trade agreement with proximally 81 countries notably with the Member States of the European Free Trade Association (EFTA), Greater Arab Free Trade Area (GAFTA)....

⁹ This agreement was the first between the EU and a Mediterranean partner.

devaluating the currency¹⁰. Therefore, the total trade to Gross Domestic Product has grown from 37.75 percent in 1971 to 103 per cent in 2013. The average of this ratio is 84.8 per cent over the period 1973-2013 (Figure 1).

Figure 1.
Evolution of trade openness in Tunisia (1973-2013)



Source : Financial Statistics, Central Bank of Tunisia and World Development Indicators.

Since the mid-1980s, import ratio and export¹¹ ratio have had consistent co-movements. Tunisia presents a serious external trade deficit due to a sharp drop in traditional exports (e.g. crude oil and phosphates), the importation of most capital equipment and the increase of disposable income leading to a surge in consumer goods imports.

¹⁰Taxes on imported goods and services reached 15 % in the 80 and dropped to 5% in the end of decade 2000. Currently, the Tunisian dinar is not a fully convertible currency, although it is convertible for current account transactions. The exchange rate regime is classified as stabilized and aimed at avoiding the build-up of inflationary process.

¹¹ The export-oriented strategy in Tunisia ended up creating a new constituency, which has a stake in export (Bechri and Naccache, 2003).

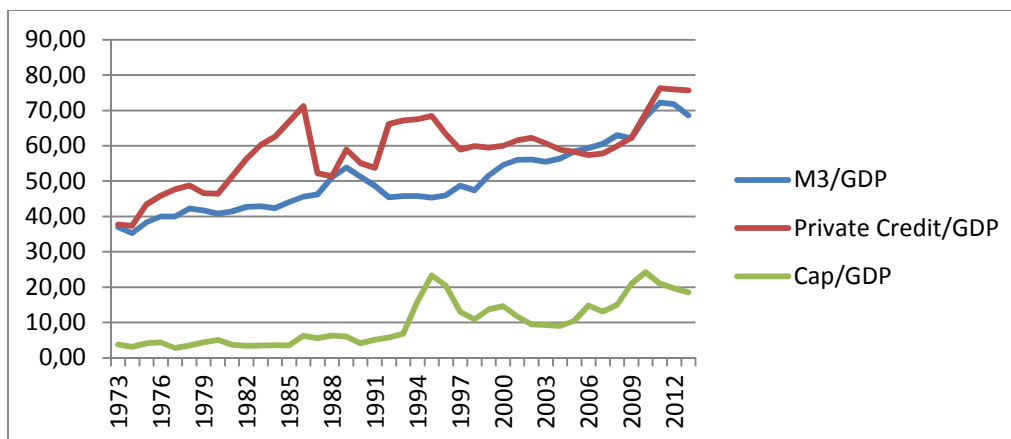
3.2. Financial Deepening in Tunisia

The Structural Adjustment Program (SAP) initiated in 1986 aimed at a general economic liberalization. Many reforms have been carried out in order to liberalize the banking sector such as the abolition of the Central Bank authorization for loans in 1988, the abolition of financing public firms at preferential conditions, the liberalization of bank margin in 1994, the modernizing and restructuring the public banking system (increase of the minimum capital requirement, the consolidation of financial fundamentals of the banking sector...).

Among the reforms promoting the Tunisian stock market: tax reduction on profit for listed companies (from 35% to 20%), new regulation for issuing bond in 1988, creation of placement companies in 1992, institution of rating agencies in 1996 and the financial security law in 2005. Furthermore, foreign investors were permitted to purchase shares in resident firms or indirect investment through mutual funds etc...

Generally, the financial sector indicators continually improved over time. There is a substantial increase in the level of credit to the private sector (Fig. 2), which averaged 58.55 per cent of GDP during the period of 1973–2013.

Figure 2.
Evolution of indicators of financial development in Tunisia
(1973-2013)



Source: World Bank. World Development Indicators and Financial Statistics, Central Bank of Tunisia

We observed a noticeable increase of liquid liabilities while the stock market capitalization remained small (Fig.2). The latter represented only 18.5 per cent of GDP in 2013.

It seems that the development of finance and trade are jointly undertaken in Tunisia. Are there any relationships between trade openness and financial depth in Tunisia?

4. Research Methodology

4.1. Indicators

* The trade openness indicator used is the sum of export and import as a percentage of GDP following Baltagi et al (2009) and Hanh (2010) (hereafter TO). This ratio is a simple and common indicator of trade openness. It is both clearly defined and well measured (Kim and al, 2010).

Financial development can't be reflected by one single aggregate measure (Ang, 2008). In this study, we employed three commonly used measures of financial development. Each indicator captures a different aspect of financial development.

* Liquid liabilities as a percentage of GDP (hereafter LIABI) consists of currency held outside the banking system plus demand and interest-bearing liabilities of banks and nonbank financial intermediaries (M3 divided by GDP). This variable is commonly used as an indicator of financial depth (eg. Hanh, 2010; Gries et al, 2009). It measures the ability of banks to mobilize funds¹².

* Private credit provided by the banking sector as percentage of GDP (hereafter PRIVATE) is considered as the most important banking development indicator. It is used following Svaleryd and Vlachos (2002) and Baltagi et al (2009) among others. It measures the financial resources provided to the private sector and to new firms.

* The stock capital market capitalization as percentage of GDP (hereafter SM) is equal to the stock market value of listed companies as a percentage to GDP. This indicator represents the size of the stock market relative to the economy.

In our study, we used annual data from 1973 to 2013. Data on trade openness and domestic credit to private sector are taken from the World Development Indicators (2014) published by the World Bank. Data on liquid liabilities and stock market capitalization are respectively collected from Financial Statistics of the Central Tunisian Bank and the Tunisian Stock Market Council.

4.2. Model and Econometric Methodology

Our model is written as follows:

$$\ln(\text{TO})_t = \alpha + \beta \ln(\text{LIABI})_t + \lambda \ln(\text{PRIVATE})_t + \delta \ln(\text{CB})_t + \varepsilon_t \quad (1)$$

¹²However, this indicator is critical because funds are not always used to finance new entrepreneurs (Law, 2008).

Where TO represents trade openness, $LIABI$ expresses liquid liabilities, $PRIVATE$ is Domestic credit to private sector and CB is the ratio of stock market capitalisation (all as percentage of GDP). ε_i is a random variable assumed as in the usual fashion to be serially uncorrelated with zero mean and constant variance. All the variables are obtained in logarithm.

The parameters of the model measure the sensitivity of the variables to trade openness. Following the literature review, the equation of our model will have $\beta > 0$ (elasticity of liquid liabilities to trade openness), $\lambda > 0$ (elasticity of domestic credit to private sector to trade openness), and $\delta > 0$ (elasticity of stock market capitalization). However, if some of these coefficients are positive while others are negative, this means that elasticity varies depending on the degree of openness.

This paper has employed autoregressive distributed lag (ARDL) co-integration procedure proposed by Pesaran et al. (2001) in order to examine the causal relationship between trade openness and financial development in Tunisia. ARDL enabled to overcome the limits related to the method suggested by Engle and Granger (1987) and Johansen (1991). The advantage of this method is that it does not require the same order of integration of variables. Also, ARDL estimation is applicable even if the explanatory variables are endogenous. This procedure permitted avoiding the potential bias associated with unit roots and co-integration tests. Furthermore, unlike conventional co-integration procedures, ARDL is more robust for small size samples.

The Error Correction Representation of the ARDL specification model for Eq. (1) is given by:

$$\Delta \ln(TO)_t = a_0 + \sum_{i=1}^p b_i \Delta \ln(TO)_{t-i} + \sum_{i=0}^p c_i \Delta \ln(LIABI)_{t-i} + \sum_{i=0}^p d_i \Delta \ln(PRIVATE)_{t-i} + \sum_{i=0}^p e_i \Delta \ln(CB)_{t-i} +$$

$$\delta_1 \Delta \ln(TO)_{t-1} + \delta_2 \Delta \ln(LIABI)_{t-1} + \delta_3 \Delta \ln(PRIVATE)_{t-1} + \delta_4 \Delta \ln(CB)_{t-1} + \varepsilon_t \quad (2)$$

Where Δ denotes the first difference operator, a_0 is the drift component, and ε_t is the usual white noise residual, and the variables $\ln(TO)$, $\ln(LIABI)$, $\ln(PRIVATE)$ and $\ln(CB)$ are as defined earlier.

We began by estimating equation (2) by ordinary least squares (OLS) in order to test the presence of a long run relationship among the variables by conducting an F-test to determine the joint significance of lagged levels of the variables involved, i.e., $H_N: \delta_1 = \delta_2 = \delta_3 = \delta_4 = 0$ against the alternative $H_A: \delta_1 \neq \delta_2 \neq \delta_3 \neq \delta_4 \neq 0$

The null hypothesis of no co-integration among variables in the MDF can be rejected irrespective of the orders of integration for the time series, if the computed F-statistic is shown to be higher than the upper bound of the critical values. Conversely, if the computed F-statistic falls within the band, prior information about the order of integration of variables is necessary to make a decision on long-run relationships. Our results show the existence of a long run relationship between $\ln(TO)$, $\ln(LIABI)$, $\ln(PRIVATE)$ and $\ln(CB)$. The calculated F-statistics ($TO|LIABI, PRIVATE, CB$) is 16.211 with significance Level of 0.0003 as suggested by SBC).

We found that the inverse causality from TO to $PRIVATE$ is statistically significant (at the 5% level). However, the causality from TO to $LIABI$ and from TO to CB are not statistically significant even at 10% level (Table 1).

Table 1.

Test for cointegration relationship (Causality inverse)				
Model	Calculated F-statistic	Lag	Significance level	Critical bound ¹³ F-statistic I(1)
$F_{LIABI}(LIABI TO,PRIVATE,CB)$	0.393	1	1 %	5.816
$F_{PRIVATE}(PRIVATE TO,LIABI,CB)$	4.935*	1	5%	4.194
$F_{CB}(CB TO,LIABI,PRIVATE)$	0.691	1	10%	3.532

Source of critical values: Narayan (2005). Notes: Estimation period = 1973-2013. * Significant at 5%.

Once co-integration is established, the conditional ARDL (p, q_1, q_2, q_3) long-run model for $\ln(TO)_t$ can be estimated as:

$$\ln(TO)_t = a_0 + \sum_{i=1}^p b_i \ln(TO)_{t-i} + \sum_{i=0}^{q_1} c_i \ln(LIABI)_{t-i} + \sum_{i=0}^{q_2} d_i \ln(PRIVATE)_{t-i} + \sum_{i=0}^{q_3} e_i \ln(CB)_{t-i} + \varepsilon_t(3)$$

Results and Discussion

Using the procedure of Pesaran et al. (2001), we have obtained the level long-run parameter estimates of the model. The ARDL model in levels using order ARDL (4,4,5,5) model as selected by the SBC and along with their asymptotic standard errors are shown in Table 2.

The results for the long-run estimation show that all coefficients are statistically significant (at the 5% level).

Table 2.

Estimated long run coefficients using the ARDL approach

Equation (3): ARDL(4,4,5,5) selected based on SBC. Dependent variable is Ln(TO)

Regressor	Coefficient	Standard Error	t-ratio	t-probability
C	3.3855	0.3994	8.47577	0.00001
Ln(LIABI)	0.8766	0.1105	7.92831	0.00002
Ln(PRIVATE)	-0.5636	0.1678	-3.35747	0.00842
Ln(CB)	-0.0134	0.0048	-2.75932	0.02246

Table 3.

Error Correction Representation for the selected ARDL model

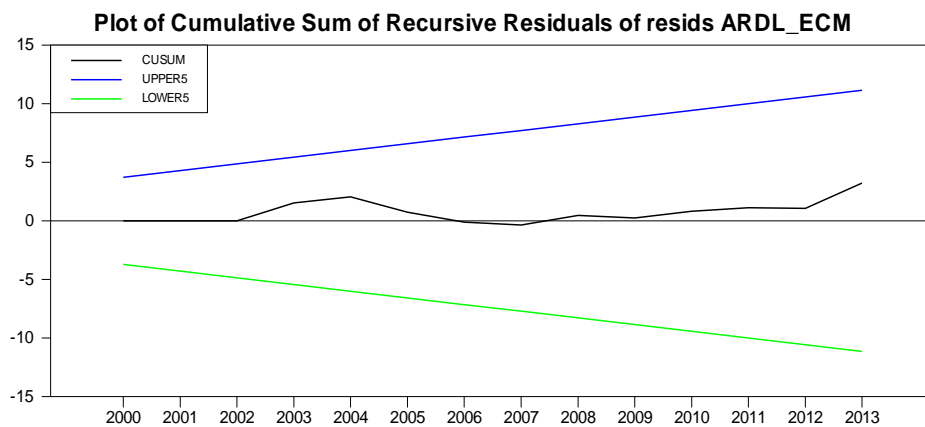
ARDL (4, 4, 5, 5) selected based on SBC. Dependent variable is Ln(TO)_t R² = 0,806

Regressor	Coefficient	Standard Error	t-ratio	t-probability
C	0.014	0.021	0.681	0.509
Δ Ln(TO) _{t-1}	0.046	0.219	0.210	0.837
Δ Ln(TO) _{t-2}	-0.243	0.254	-0.954	0.360
Δ Ln(TO) _{t-3}	-0.398	0.236	-1.686	0.119
Δ Ln(TO) _{t-4}	0.171	0.227	0.755	0.466
Δ Ln(LIABI) _t	-0.0002	0.405	-4.95e-04	0.999
Δ Ln(LIABI) _{t-1}	-0.150	0.411	-0.366	0.720
Δ Ln(LIABI) _{t-2}	0.080	0.491	0.164	0.872
Δ Ln(LIABI) _{t-3}	0.326	0.477	0.684	0.507
Δ Ln(LIABI) _{t-4}	0.114	0.388	0.293	0.774
Δ Ln(PRIVATE) _t	0.132	0.223	0.591	0.566
Δ Ln(PRIVATE) _{t-1}	-0.178	0.203	-0.880	0.397
Δ Ln(PRIVATE) _{t-2}	-0.399	0.242	-1.643	0.128
Δ Ln(PRIVATE) _{t-3}	-0.044	0.247	-0.181	0.859
Δ Ln(PRIVATE) _{t-4}	-0.494	0.250	-1.976	0.0736
Δ Ln(PRIVATE) _{t-5}	0.378	0.235	1.611	0.135
Δ Ln(CB) _t	-0.048	0.069	-0.703	0.496
Δ Ln(CB) _{t-1}	0.119	0.074	1.612	0.135
Δ Ln(CB) _{t-2}	0.093	0.066	1.390	0.191
Δ Ln(CB) _{t-3}	-0.155	0.064	-2.414	0.034
Δ Ln(CB) _{t-4}	0.065	0.069	0.951	0.361
Δ Ln(CB) _{t-5}	-0.108	0.064	-1.670	0.123
ecm _{t-1}	-1.870	0.542	-3.448	0.005

Error-correction coefficient measures the speed of dependent variable toward its long-run equilibrium following a change in indicators of financial development. This coefficient is significant and negative which ensures that such long-run relationship exists. Therefore, we assess the stability of the long-run relationship between the trade openness and the financial development indicator. We have applied the CUSUM and CUSUM-squared tests¹³. As can be seen in Fig.3, Fig.4 the plot of the CUSUM-squared statistics stay within the critical bounds (represented by a pair of straight lines) indicating the stability in the coefficients over the sample period.

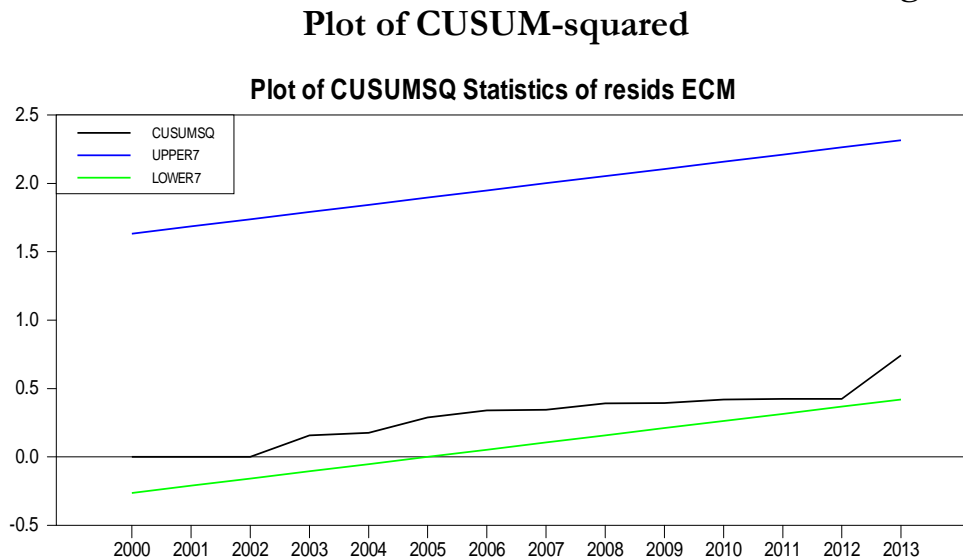
Figure 3.

Plot of CUSUM



¹³ The CUSUM-squared statistics are based on the squared recursive residuals based on the first set of observations.

Figure 4.



In the light of our empirical results, trade openness is affected by the financial depth in Tunisia. Our findings are consistent with some previous studies supporting evidence that trade openness and financial development are strongly associated (e.g. Beck, 2002; Becker and Greenberg, 2005, Altaee et Al-Jafari, 2015). However, our results are opposite to those of Asongu (2010) and Kar et al (2014) who do not find any linkage and causality between financial development and openness in respectively African countries and Greece.

The causality investigation shows bi-directional causality between private credit and trade openness, but a direct unidirectional causality running from financial intermediaries' ability to mobilize funds, the size of stock market and trade openness in Tunisia.

At short run, the Error Correction Model has indicated that relations between LIABI, CB, PRIVATE and trade are not significant for the most part. However, $(CB)_{t-3}$ is negatively significant correlated with trade openness at 5% and $PRIVATE_{t-4}$ at 10%. Our findings are

similar to those of Kim et al (2010)¹⁴ underlining that in low financial-development countries (notably bank-based) financial sector improvement presents a significant long-run impact but insignificant short-run effect on trade openness. In fact, financial development is subject to financial fragility at short run. So, we argue that financial development and trade openness relationship in Tunisia needs time and it is affected by the relative influence of financial fragility that accompanies the financial liberalization.

At long run, as expected, it appears that financial development (explained by LIABI) may drive the sum of imports and exports. Nevertheless, private credit and market capitalization negatively affect trade openness. The presence of positive and negative elasticity means that more financial depth doesn't necessarily induce the fully expected development of foreign trade¹⁵. Furthermore, impacts on TO are more confirmed for bank development indicators (private credit and liquid liabilities) than for stock market development indicator (their elasticity coefficients are respectively 0.8766, -0.5636 and -0.0134). This is explained by the banks' domination in the Tunisian financial system.

We have concluded that liquid liabilities constitute a significant and positive determinant of trade openness. Thus, the banks' experience and their great presence allow more profit from financial liberalization and favor open trade notably after the Structural Adjustment Program. A bi-directional causality is shown between the evolution of international trade participation and private credit. Yet, unlike the expected results, private credit negatively affects trade openness. This may be related to the fact that Tunisian export sector is primarily offshore financed. Perhaps, private credit that stimulates national products can cause a substitution of imports. Hence, the Tunisian

¹⁴Their study of a panel of 87 countries over the period 1960-2005 highlighted that trade openness and financial development are complements in the long run but substitutes in the short run.

¹⁵If all coefficients were positive, we can conclude that higher trade increase would result from smaller financial development.

financial sector is far from achieving an efficient long term savings mobilization and investment finance (Balioune-Lutz, 2009). Consequently; trade can be hampered by the inefficiency of the financial system. Indeed, poor countries tend to import financially intensive goods rather than develop their own financial system (Do and Levchenko, 2004). This might be also attributed to the strict version of the openness hypothesis suggested by Rajan and Zingales (2003). This hypothesis requires that the trade openness marginal effect would be non-positive when capital account is not sufficiently open.

The empirical findings indicate that the stock market capitalization elasticity is weak and negative. The increase of stock market size discourages trade openness. Furthermore, we did not find any evidence of causality from trade openness to market capitalization. This can be assigned to problems of the Tunisian emergent stock market such as thin trading, small listed companies, and high information costs and so on.

VI. Conclusions

Tunisia has recorded impressive reforms in both trade and finance policies since the Structural Adjustment Program (SAP) in 1986. This paper tried to examine linkages between financial development and trade openness and in Tunisia over the period 1973- 2013. The originality of this study lies in the use of a recent econometric technique which is autoregressive distributed lag (ARDL) suggested by Pesaran et al. (2001). To consider the financial development, we use the ratio of liquid liabilities (M3) to GDP and Private sector credit divided by GDP (as banking development indicator) and also the value of listed companies on the stock market relative to GDP (as the capital market development indicator). The sum of export and import as a percentage of GDP is used as a measurement of trade openness.

Results imply that trade openness in Tunisia may benefit from the financial depth. Trade seems to be sensitive to financial development. Moreover, this study highlighted a bi-directional causality between private credit and trade openness but a direct unidirectional causality running from financial intermediaries' ability to mobilize funds, the size of stock market and trade openness in Tunisia.

At short run, the relation between trade openness and financial development is almost insignificant. The reason is likely to be that interaction between two factors needs time. Moreover, we argued that financial development and trade openness relationship in Tunisia is affected at short run by the financial fragility that accompanies the financial liberalization.

At long run, we have concluded that the effect of financial development on trade openness vary from one indicator to another. We found that, in agreement with previous empirical works, liquid liabilities have positive impacts on the sum of exports and imports. However, private credit and market capitalization negatively affect trade evolution.

A major implication of our finding is that reforms to improve the efficiency of the banking sector and stock market which enabling to overcome institutional weaknesses and establish transparent rules, will strengthen foreign trade in Tunisia. This study recommends the adoption of compatible macroeconomic policies in order to prevent policy reversal that would negatively affect the effectiveness and the level of openness. One way is to increase the diversification of exported products and trade markets. The change in export structure increases the value-addition and reinforces the contribution of exports in economic growth. Another avenue is to take measures in favor of private sector development in order to establish a positive link between trade openness and investments in the private sector. Otherwise, authorities need to enhance imports of intermediate goods which can stimulate the private credit.

Finally, this work can be extended by considering the relationship between parallel openness of trade and capital flow, financial development and economic growth in Tunisia.

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