



“The effects of the informal economy on the relationship between financial development and economic growth”

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THE EFFECTS OF THE INFORMAL ECONOMY ON THE RELATIONSHIP BETWEEN FINANCIAL DEVELOPMENT AND ECONOMIC GROWTH

Abstract

The relationship between economic growth and the development of financial systems has been analyzed from different perspectives for a long time. This paper addresses the effects of the informal economy on the relationship between financial development and economic growth, using a panel data covering 20 countries during the period 1993–2020. The results show that financial development, as measured by the IMF's Financial Development Index, is positively associated with economic growth (the coefficient α_1 related to financial development *fd* is positive and statistically significant at 5%). The results also show that large sizes of the informal economy moderate the influence of this association (α_1 remains positive and statistically significant at 1%, while the coefficient α_2 related to the interaction between financial development and informal economy, *fd* and *ie*, is negative and statistically significant at 1%). In effect, financial development has the greatest impact on economic growth whenever there is control over the informal economy's size. Inversely, a favorable ground for the informal economy limits the positive association between financial development and economic growth.

However, the results show the absence of a causality relationship between financial development and economic growth ($W\text{-bar} = 1.0015$ and $Z\text{-bar} = 0.0048$; $p\text{-value} = 0.9980$). The informal economy plays no role in making this type of link significant ($W\text{-bar} = 0.9761$ and $Z\text{-bar} = -0.0756$; $p\text{-value} = 0.9520$).

Keywords

informal economy, economic growth, financial development, shadow economy

JEL Classification

E26, O17, O16, O50

INTRODUCTION

Attaining sustained economic growth represents a major challenge to all countries. The obstacles differ across countries depending on certain variables, such as the availability of natural resources, human potential, technological capabilities, and, obviously, the capital, which participates in accelerating growth rates. The financial system is an important variable that can foster economic activities and generate a growth mechanism. In fact, an advanced financial system facilitates investments and helps investors assess their risk in relation to the return of investments. Easy investment enables efficient allocation of resources, leading to rapid improvement in a country's human and physical capital. Consequently, a developed financial system is considered an engine to economic development.

However, the impact of finance on growth can fluctuate according to the level of development of the economy and according to many other variables that can affect this relationship. For instance, this impact

could be influenced by the level of the informal economy (otherwise known as the underground or shadow economy), which is often seen as a global economic problem. The informal economy has multiple dimensions and features in which characteristics, sizes and effects can be divergent. In some countries, its expansion can be due to tax pressure, which causes a decline in real income and, consequently, to the movement of individuals towards parallel activities. Tough regulation and procedures imposed by governments on some sectors, including trade barriers and labor market restrictions, are also a major factor in undermining individuals' ability to be linked to the formal economy, and to make them consequently move towards the informal economy.

Therefore, the relationship between financial development and economic growth can be strongly affected by the informal economy's influences. It is generally believed that the informal economy reduces government revenues and disrupts financial development. However, empirical studies show mixed results that reflect the ambiguity of the relationship between the variables.

1. LITERATURE REVIEW

The study of the relationship between the three variables: economic growth, financial development and informal economy, notably taken in pairs, has been the subject of many studies that used linear and non-linear modeling patterns (e.g., Capasso et al., 2022; Canh & Thanh, 2020; Medina & Schneider, 2018; Elgin et al., 2021; Elgin & Uras, 2013; Puatwoe & Piabuo, 2017; Guru & Yadav, 2019; Deidda & Fattouh, 2002; Shen & Lee, 2006; Law & Singh, 2014; Arcand et al., 2015; Ibrahim & Alagidede, 2018; Botev et al., 2019).

Regarding the relationship between financial development and economic growth, the literature generally indicates that financial development can be a major driver of economic growth. According to the theoretical model of Berthélemy and Varoudakis (1996), the interaction between the financial sector and the real sector produces multiple equilibria: two stable and one unstable. The first stable equilibrium is characterized by low financial development and negative growth rates, while the second stable equilibrium is associated with a developed financial sector and positive growth rates. The unstable equilibrium represents the transition and is characterized by a well-developed financial sector and negative growth rates.

The existence of different endogenous growth equilibria associated with different levels of financial development has been confirmed by Eggoh and Villieu (2014). Their model, however, highlights the existence of positive growth rates at different equilibrium levels.

The model of Aka (2005), which is a version of the Pagano model, shows that the impact of financial development on growth is dependent on the capital market. The growth rate appears as an increasing function of financial intermediation's efficiency.

In the same context, by using panel data studies, various studies (e.g., Rioja & Valev, 2004; Rousseau & Wachtel, 2011; Cecchetti & Kharroubi 2012; Lo et al., 2020) show that the initial level of financial development determines the effect on growth. In general, financial development has no significant impact on growth in developing countries, but a significant impact in financially developed countries.

Other studies show that the effect of financial development on growth depends primarily on the level of income (e.g., Demetriades & Law, 2006; Gaytan & Rancière, 2004; Benhabib & Spiegel, 2000) consider that financial development has no significant impact on growth in low-income countries, and a greater effect in middle and high-income countries.

Further studies consider that the relation between financial development and growth is conditioned by the level of human capital (e.g., Nar, 2020; Sarwar et al., 2021). In effect, financial development begins to promote growth only at a certain level of education.

Using a model that takes into account the asymmetry of inflation and public spending, Chen et al. (2020) analyze the asymmetric effects between the

two variables. Their NARDL model showed that the short-term positive shocks on financial development increase economic growth, while the long-term negative shocks decrease it.

In a study of 82 countries, Berthélemy and Varoudakis (1998) found that in the post-financial reform period, financial sector development has no significant impact on growth. Also, studies by Ngongang (2015) and Ajibola (2017) related to sub-Saharan African countries show the absence of significant effects of financial development on growth. Those results were explained by the underdevelopment of financial systems, the instability of growth rates and the absence of good governance in this region.

In addition, a study by Asteriou and Spanos (2019) highlights the negative impact of financial development on the growth of the European Union after the subprime crisis.

To assess the effect of financial development on economic growth in six countries of Central African States, Nonga et al. (2022) found, during the period 2000–2020, a nonlinear U-shaped relationship between those variables. Meanwhile, financial intermediation was found to be inversely related to economic growth.

Concerning the bidirectional relationship between the informal economy and economic growth, Baklouti and Boujelbene (2019), using a sample data for 47 countries from 2005 to 2016, found a significant relationship between the two variables for both developed and developing countries.

In their analysis on 18 transition economies during the period 2002–2015, Luong et al. (2020) concluded that a decrease in informal economy can stimulate public expenditure, especially in infrastructure, which helps to expand growth.

By studying the relation between the informal economy and economic growth, Dreher et al. (2009) showed that the relative size of the informal sector is negatively correlated with the rate of economic growth. The growth of the informal economy causes less revenues and therefore additional pressure on public finances. This reduces the quality and quantity of services provided by the gov-

ernment, which leads to ineffective government policies and tends to hinder economic, budgetary, and social policies favorable to growth.

Higher informal economy can also lead to an increase of tax rates in the formal sector, which creates even stronger incentives for individuals to participate in the informal economy (Schneider & Enste, 2000). The informal economy is therefore seen as a force that may weaken the official economy by attracting outside factors of production and creating unfair competition with legally established businesses.

Contrary to these results, Zaman and Goschin (2015) considered that the informal economy can affect growth positively, as it represents an alternative solution to money creation and unemployment. The informal economy can mitigate government-induced distortions and thus can lead to an improvement of the economic activity. In this sense, the informal sector acts as a complement rather than a substitute for the formal economy.

Also, Schneider and Hametner (2014) found a positive relationship between the size of the informal economy and GDP growth in Colombia. They considered that the elimination of the informal economy does not benefit the economy and the society as a whole.

Regarding the relationship between the informal economy and financial development, researchers often argue that the financial system is one of the main factors influencing the decision to participate in shadow activities through its effect on costs and benefits. Generally, the improvement of the financial system motivates individuals and emerging businesses to move their activities to the formal economy. In this context, Blackburn et al. (2012) showed that greater tax evasion and a larger size of the informal economy result from financial system's weaknesses.

Using panel and cross-sectional analyses, Bose et al. (2012) examined the relationship between the size of the informal economy and the banking sector's development in a sample of 137 countries over the period 1995–2007. Empirical results showed that the development of the banking sector leads to a smaller informal economy. Specifically, the

depth and efficiency of the banking sector are important in reducing the size of the informal economy.

Using panel data for 29 developed and developing countries during the period from 1975 to 2015, Gharleghi and Jahanshahi (2020) found a negative relationship between the variables, as countries with developed financial systems having a smaller informal economy. Besides, Njangang et al. (2020) found that financial development leads to a decrease in informal activities in 41 African countries.

Furthermore, by using a panel data for European Union transition economies during the period 2003–2014, Bayar and Ozturk, (2016) found, in the long run, a negative effect of financial development on the informal economy.

To study the dynamic relationship between the informal economy and financial development, Berdiev and Saunoris (2016) used data for 161 countries during the 1960–2009 period. They conducted a panel VAR analysis and found that financial development reduces the size of the informal economy. Imamoglu (2021) studied the relationship between the development of the financial sector and the size of the underground economy in European Union countries. The panel analysis was carried out on 25 countries for the period 2004–2017. The results showed that financial development considerably limits the role of the informal economy. He concluded that the latter would not be an impediment to achieve European common growth objectives.

Using an NARDL model, which introduces non-linearity for the asymmetric effects of the informal economy on the inclusion of financial markets, Hajilee et al. (2017) concluded that the informal economy has significant short-term asymmetric effects on the inclusion of financial markets in the majority of countries in the sample.

In addition, it is often seen that the financial sector is negatively affected by the informal sector (e.g., Dabla-Norris et al, 2008; Capasso & Jappelli, 2013). In effect, the development of the informal economy makes the financial system incapable of properly managing its economic functions. Consequently,

the informal economy may slow down the economy through its effects on the financial system.

However, the study of the interaction between the three variables, namely, economic growth, financial development, and informal economy, taken together, has been so far very limited, notably in the case of developing countries.

This paper focuses on determining the role of the informal economy in the relationship between financial development and economic growth for a sample of 20 countries (see table 1) during the period 1993–2020. The sample includes emerging and developing economies. This choice aims to study the interaction of variables in countries with different levels of informal economy.

The relationship between informal economy, financial development and economic growth as discussed above can lead us to consider the following hypotheses:

- H1: *Increased financial development is associated with higher economic growth.*
- H2: *The effects of financial development on economic growth are amplified by lower levels of the informal economy.*
- H3: *The causal links between financial development and economic growth are greater for lower levels of the informal economy.*

2. METHOD

Different indicators were applied in the literature to measure the levels of economic growth and financial development. In this paper, the variables' choice is based on the widely accepted measures. The annual GDP growth rate is used to measure economic growth, while the Financial Development Index (FD Index) of the International Monetary Fund (IMF) is used as a measure of financial development. According to the IMF, the FD Index synthesizes nine indices that summarize how developed financial institutions and financial markets are in terms of depth (size and liquidity), access (ability of individuals and businesses to acquire financial services)

and economic efficiency. This measure has been adopted in several studies (e.g., Svirydzenka, 2016; Kelmanson et al., 2019; Ito & Kawai, 2018).

The non-adoption of two other measures of financial development, namely the domestic credit provided by the financial sector, and the domestic credit granted to the private sector (as a % of GDP), is related to two reasons: First, the FD Index is a more exhaustive and synthetic measure. Second, the absence of long-series data for a number of countries.

To test the impact of financial development on economic growth (hypothesis 1), the following equation is used:

$$eg_{it} = \alpha_1 fd_{it} + \beta' X_{it}^k + \gamma_t + \delta_t + \varepsilon_{it}. \quad (1)$$

With i and t related respectively to the countries and the time period; the dependent variable (eg) is a measure of economic growth; (fd) is a measure of financial development; X is a vector of variables that are considered to be determinants of economic growth. This vector is composed of the informal economy size (ie), the level of investment (inv), inflation (inf) and economic openness (op); γ_t and δ_t respectively capture country-specific and time-specific fixed effects; and ε_{it} is the random error term.

Hypothesis 1 is confirmed if the coefficient α_1 is positive and statistically significant.

Then, to test hypothesis 2, equation (2) is developed by the interaction of the economic development and the informal economy as follows:

$$eg_{it} = \alpha_1 fd_{it} + \alpha_2 fd_{it} \cdot ie + \beta' X_{it}^k + \gamma_t + \delta_t + \varepsilon_{it}. \quad (2)$$

It is important to note that hypothesis 2 seeks to measure the effect of financial development on economic growth conditioned by different levels of the informal economy. This last variable is considered as a moderating variable. Econometrically, the variables are introduced into the equations in multiplicative forms.

The marginal effect of financial development on economic growth conditioned by the level of the

informal economy is defined as:

$$\frac{\partial eg}{\partial fd} = \alpha_1 + \alpha_2 \cdot ie. \quad (3)$$

To analyze the marginal effect, various types of assessments were used. This paper opts for the minimum, mean and maximum evaluation adopted by Cohen and Cohen (1983) and supported by Aiken and West (1991). This choice is related to the nature of the moderating variable. Hypothesis 2 is validated when the marginal effect of financial development is statistically significant and diminishes with increasing levels of the informal economy.

The above equations allow us to test the heterogeneous impact of financial development on economic growth following the variations in informal economy levels. Therefore, it will be possible to analyze whether financial development will have the same impact on economic growth for different sizes of informal economy.

The equations are estimated by the method of individual and time fixed effects. This choice is justified by the results of the test of the joint significance of fixed effects. The equations are also re-estimated by replacing country specificities with regional effects.

For hypothesis 3, the tests of stationarity, homogeneity, independence and Dumitrescu-Hurlin panel Granger causality test are analyzed.

The dataset includes a panel of 20 countries observed between 1993 and 2020. The countries selected are those with more than 30% of informal economy and for which all the required data is available.

Table 1. Country and regional effects

List of Countries	Tunisia, Morocco, Algeria, Egypt, Nigeria, Ivory Coast, Ghana, Senegal, Tanzania, Madagascar, Ukraine, Bulgaria, Georgia, Russia, Thailand, Philippines, Bolivia, Colombia, Brazil, Uruguay.
Regional Breakdown	10 African countries, 4 European countries, 2 Asian countries and 4 South American countries.

To overcome the obvious measurement problems for the selected variables, different sources are included. The data details are shown in Table 2.

Table 2. Variables

Variables	Abbreviation	Indicators	Sources
Economic growth	eg	Annual GDP growth rate (constant \$ - 2010)	World Bank Indicators
Financial development	fd	Financial development index	International Monetary Fund
Informal economy	ie	Share of informal economy in GDP	Elgin et al., (2021). World Bank Indicators
Investment	inv	GFCF (gross fixed capital formation)	World Bank Indicators
Inflation	inf	Consumer price index (CPI)	World Bank Indicators
Economic openness	op	Merchandise trade relative to GDP (Current \$)	World Bank Indicators

3. RESULTS

According to the results summarized in Table 3, the average rate of economic growth is low since most of the countries in the sample are developing and to the fall in growth experienced worldwide in 2020 due to the COVID-19 pandemic (negative growth rates for the majority of countries). The results also show that the distribution of the variable openness is the most dispersed by contrast to the variable financial development which is the least fluctuating.

The average inflation reached almost 10%. According to primary data, this high rate was caused by values that sometimes exceeded 50% in some countries, notably in the beginning of the study period (such as Bulgaria, Ukraine, Georgia, Russia, and Brazil). The series are all asymmetrical with different levels. Inflation and economic growth are the most skewed with respect to other variables.

Table 3. Descriptive statistics (560 observations)

Variables	Mean	Median	Max.	Min.	Std. Dev	Skew.	Kurt.
<i>eg</i>	3.23	4.01	15.33	-29.3	4.43	-2.12	12.06
<i>fd</i>	0.24	0.20	0.74	0	0.15	1.07	3.59
<i>ie</i>	44.99	42.78	69.34	31.2	9.86	0.83	2.80
<i>inv</i>	22.79	21.68	50.78	1.16	7.35	0.92	4.48
<i>inf</i>	9.66	5.69	85.75	-2.25	12.67	3.14	14.40
<i>op</i>	50.87	45.15	122.52	8.74	23.93	0.82	3.12

Table 4. Correlation of variables

	eg	fd	ie	inv	inf	op
<i>eg</i>	1.00					
<i>fd</i>	-0.05	1.00				
<i>ie</i>	0.008	-0.22***	1.00			
<i>inv</i>	0.13***	-0.06	-0.09**	1.00		
<i>inf</i>	-0.28***	-0.128***	0.14***	-0.05	1.00	
<i>op</i>	0.052	0.24***	-0.09**	0.16***	-0.18***	1.00

Note: *, **, and *** represent significance level at 10, 5 and 1%, respectively.

The results of the analysis of correlation between the selected variables are presented in Table 4. Both the ordinary parametric Pesaran correlation coefficients and the nonparametric Spearman coefficients show the absence of significant correlations.

The results of the estimation of equations (1), (2) and (3) are shown in Table 5. Country fixed effects and time fixed effects are included in the first two models (1.1) and (1.2), while the last two models (1.3) and (1.4) englobe regional fixed effects and time fixed effects. The values of the coefficient of determination show that these models explain between 43% and 76% of the variation in economic growth.

The analysis starts by testing hypothesis 1 using the equation (1.1). The financial development is associated with higher economic growth, as the coefficient *fd* is positive and statistically significant at 5%. More specifically, a 10% increase in the financial development index is found to improve the economic growth rate by 5.4%.

Table 5. Effects of financial development on economic growth: Role of the informal economy

Variables	(1.1)	(1.2)	(1.3)	(1.4)
<i>fd</i>	0.54**	0.14***	0.51*	0.98***
<i>fd_ie</i>		-0.13***		-0.02***
<i>ie</i>	-0.72***	-0.71***	-0.70*	1.08*
<i>inv</i>	0.06**	0.05**	0.46***	0.57***
<i>inf</i>	-0.13***	-0.12***	-0.11**	-0.16***
<i>op</i>	0.07***	0.07***	0.09	0.17***
Evaluation of the marginal effects of financial development				
Minimum		0.1***		0.17**
Mean		0.08***		0.06*
Maximum		0.05		0.03
Country effects	Yes	Yes	No	No
Time effects	Yes	Yes	Yes	Yes
Regional effects	No	No	Yes	Yes
R ²	0.44	0.43	0.72	0.76

Note: *, ** and, *** represent significance level at 10, 5 and 1%, respectively.

For hypothesis 2, the results of equation (2) appear in Table 5 at the level of column (1.2). This model displays the interaction effects between financial development and the size of the informal economy.

According to the signs and the significance obtained from the of the first two independent variables' coefficients (the first positive and the second negative), hypothesis 2 is confirmed, following which, financial development positively affects economic growth, and this effect is amplified by low levels of the informal economy.

The marginal effects defined in equation (3) and related to the effects of financial development on economic growth conditioned by the informal economy are shown in the second part at the bottom of Table 5. For this equation, it is not an estimate but rather a calculation of the marginal effect from the results of the model (1.2). The results illustrate that financial development strongly affects economic growth for small levels of the informal economy, which confirms hypothesis 2. In addition,

the effects of financial development on economic growth become statistically insignificant for large levels of the informal economy. In other words, countries with significant levels of the informal economy play a part in reducing the effect of financial development on economic growth.

Then, as an additional test, equations (1.1) and (1.2) in Table 5 are re-estimated by including regional effects instead of country effects, while keeping time effects. The results appear at the level of equations (1.3) and (1.4).

The estimations made at the regional and temporal levels confirm the results obtained previously. Countries where financial sectors have achieved a certain level of development can ensure economic growth, in particular by reducing the informal economy's size.

For hypothesis 3, the role of the informal economy in the causal link of financial development towards economic growth is tested. The Dumitrescu-Hurlin approach was chosen. Before presenting the results of the causality test, it is necessary to interpret the results of the unit root, homogeneity, and independence tests.

Table 6 includes the obtained results related to the stationarity tests for the variables measuring economic growth, financial development and the moderating variable of the interaction between financial development and the informal economy.

Table 6 shows that economic growth is a stationary variable. The other two variables are integrated of order 1, so they will be taken as first differences.

Table 7 presents the results of the slope homogeneity test developed by Swamy (1970). The null hypothesis is that the slope coefficients of the explanatory variables for all studied countries are the same, after carrying the regression anal-

Table 6. Results of stationarity tests

Variables	Level Test		First difference Test		Conclusion
	LLC (probability value)	IPS (probability value)	LLC (probability value)	IPS (probability value)	
<i>eg</i>	0.0000	0.0000	****	****	I(0)
<i>fd</i>	0.2756	0.7497	0.0000	0.0000	I(1)
<i>fd_ie</i>	0.0970	0.1456	0.0000	0.0000	I(1)

Table 7. Results of homogeneity and independence tests

Tests	Swamy (1970) Homogeneity Test		Breush Pagan (1980) Independence Test	
	$\tilde{\Delta}_{adj}$ Exogenous variables		LM Exogenous variables	
Test statistics Endogenous variable	fd	fd_ie	fd	fd_ie
<i>eg</i>	4.835***	4.741***	656.329***	655.998***

Note: *** represents significance level at 1%.

Table 8. Granger non-causality test results

Indicators	W-bar	Z-bar	Z-bar tilde
<i>fd does not Granger cause eg</i>	1.0015	0.0048 (p-value= 0.9980)	-0.2417 (p-value= 0.8600)
<i>fd_ie does not Granger cause eg</i>	0.9761	-0.0756 (p-value= 0.9520)	-0.3104 (p-value= 0.8100)

ysis. The results strongly reject this null hypothesis and support that heterogeneity exists across countries.

In a panel analysis of causality, independence test is crucial in selecting the appropriate estimator. The results in Table 7 clearly show the rejection of the null hypothesis of independence, which implies that the SUR method is more appropriate than an OLS estimation. The cross-sectional dependence between the 20 selected countries indicates that a shock to one country is likely to affect other countries in the sample.

After performing the preliminary tests, Table 8 presents the overall results of the Granger causality tests according to the Dumitrescu-Hurlin approach.

Table 8 shows the lack of causality between financial development and economic growth, even when the informal economy interacts with financial development.

4. DISCUSSION

Concerning the hypothesis H_1 , results confirm that financial development is positively associated with economic growth. This result is in agreement with several studies, which consider that financial development promotes growth through different channels (e.g., Beck, 2012; Cournède et al., 2015; Benczur et al., 2017). For instance, a financial system that grants more credit and facilitates the financing of compa-

nies allows for greater investment and induces an improvement of technology, which are considered as engines to economic growth.

Regarding control variables, an increase in informal activity is found to reduce significantly economic growth. This can be related to two main reasons: (i) the losses in terms of tax collection which that have been normally used for economic development and (ii) the negative consequences on the financial market through an important circulation of cash money that escapes the formal circuit.

The positive effects of investment and openness against the negative effect of inflation are consistent with the economic literature.

Regarding hypothesis 2, the results highlight the importance of the informal economy by showing that the positive relationship between financial development and economic growth is amplified by smaller levels of the informal economy. This is explained by the fact that corruption, smuggling, illegal activities, the lack of collection of taxes hamper financial development and prevent it from playing its role in economic growth.

Regarding hypothesis 3, the results show the lack of causality between financial development and economic growth. This result is maintained even when the informal economy interacts with financial development. In this case, we can deduce that hypothesis 3 is not confirmed for our sample.

In empirical studies, the effect and direction of the causal relationship between the financial system and economic growth varies according to the size of the sample, the econometric method used, the specificities of the countries and their level of financial development. Thus, this

causal relationship between financial development and economic growth has resulted in a mixed literature. Future research can make additional efforts to uncover the existence and direction of causality.

CONCLUSION

This paper studies the influence of the informal economy on the potential link between financial development and economic growth. Using a panel data covering 20 countries for the period 1993–2020, financial development is found to be positively associated with economic growth. This implies that taking actions towards fostering the banking sector and the financial markets could possibly induce higher levels of economic growth.

The results also show the importance of large sizes of the informal economy in moderating the influence of the association between financial development and economic growth. Specifically, financial development has a higher impact on economic growth when there is control over the size of the informal economy. Also, the marginal effects of financial development decrease following the increase in the size of the informal economy. Therefore, seeking to curb the expansion of the informal economy by policymakers could contribute to higher economic growth.

AUTHOR CONTRIBUTIONS

Conceptualization: Anis Khayati.

Data curation: Chokri Terzi.

Formal analysis: Anis Khayati

Investigation: Chokri Terzi.

Methodology: Anis Khayati, Chokri Terzi.

Project administration: Anis Khayati.

Resources: Chokri Terzi.

Software: Chokri Terzi.

Supervision: Chokri Terzi.

Validation: Anis Khayati, Chokri Terzi.

Visualization: Anis Khayati.

Writing – original draft: Anis Khayati, Chokri Terzi.

Writing – review & editing: Anis Khayati, Chokri Terzi.

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