



Constructing a global index of financial development: which position does morocco hold in MENA region?

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Abstract

The objective of this study is to investigate empirically the progress of financial development ¹ of MENA countries before and after financial system reforms. In order to fulfill this task, we represented the evolution of some development indicators, and then constructing a “*global index of financial development*” referring to the methodology of Demircuc-Kunt & Levine (1996) and Audrey Chouchane Verdier (2004) by using database of the “world bank” and the “international monetary fund” for the period (1980-2012). Due to the lack of database about the other countries for all the period (1980-2012), our sample has been reduced to four countries (*Algeria, Tunisia, Egypt and Morocco*). Also, these countries hold some shared characteristics that allow us to make interesting comparisons. Our results show some heterogeneity in the progress of the “*global index of financial development*” for these countries. Morocco has recorded the best results after 2005.

Keywords: MENA, Financial Development Indicators, Global Index of Financial Development, Financial Liberalization;

1. Introduction

The adoption of financial liberalization policy has been largely considered as a necessary condition for an efficient development of financial systems. This policy enables us to overcome the obstacles caused by financial repression, guaranteeing an increase of interest rates for savings account *deposits* and increasing savings² by stimulating both investment and economic growth. Thus, for a better mobilization of financial resources, a developed financial system reduces transactions and information costs. In fact, a developed financial system identifies and finances the best investment projects in order to mobilize savings for investors and maximize the diversification of risks. Moreover, Macroeconomic Stability is a prerequisite for the success of financial liberalization policy by which we have to adopt convenient Macroeconomic policies in order to promote the competition in the financial system, developing transparent and legal institutional structure for activities and financial transactions (prudential regulation, property rights, financial and economic justice ...).

Morocco, as a member of MENA region, had maintained several reforms of its financial and banking system from the 1990s, by following an irreversible process of liberalization and controlled openness of its financial system in order to set up pillars for a strong and durable economic growth. The banking sector was the highlight of these reforms, regarding its role in boosting growth and convergence process acceleration. Thus, apart from the privatization of public banks and restructuring of specialized banks, the Moroccan financial sector has achieved a profound change in its regulatory and institutional structure in order to match the international norms and standards. Regarding the main components of the Moroccan financial system (nearly 60% of the financial system assets), its banking sector introduces a similar degree of diversification to the developed countries that have higher levels of financial development such as Mexico or South Korea. This diversification is associated with depth and financial strength increasingly maintained and compared favorably with the regional average³.

Since the Moroccan financial sector has currently emerged as one of the most powerful and organized sector of the southern Mediterranean countries, new challenges particularly related to the current and future commitments in the context of the liberalization of financial services have also emerged. These challenges acutely concern the question of adapting the sector to the

¹ Intermediaries financial development.

² Increased saving does not always correspond to increased investment. If savings are stashed in or under a mattress, or otherwise not deposited into a financial intermediary such as a bank, there is no chance for those savings to be recycled as investment by business.

³ MOUFTI Said, Système financier marocain : pour une convergence accélérée vers les standards de l'Union européenne », conférence économique africaine, 14 nov. 2008.

demands of a globalized and competitive market that imposes as well the challenges of openness to the international financial markets.

Thus, in order to ensure a better funding of the Moroccan economy, the financial sector has experienced a progressive liberalization, which has taken place through two stages since the early 1990s:

- The first set of reforms, launched in the early 1990s, aimed essentially at the banking sector.
- The second stage of reforms initiated in the mid-1990s focused more on the capital market, with the pursuit of the liberalization measures of the banking sector.

Before the 1990s, almost 65% of Bank Resources were allocated in the form of mandatory employment with its interest rate that was below the market rate. For this reason, the appropriation of 35% of the left resources was increased to very high interest rates.

Since the early 1990s, the financial sector in Morocco has witnessed a liberalization movement marked by reforms (3D: Deregulation, decompartmentalization, disintermediation) supported by series of initiatives of the World Bank. These reforms focused on the Banking Sector (1991-1995), the capital market development and the extension of the financial sector liberalization (since 1996).

In 2003, a study undertaken by the IMF⁴, which studied the efforts exposed in terms of the financial reforms since the beginning of the 1970s until 1996, ranks Morocco among the countries that have made considerable efforts, with a financial liberalization index of 11 out of 18. This reforms process started to show its results since 1993. However, despite all these strategies, Morocco still has to increase its efforts in other fields such as the institutional environment, the financial openness and the nonbanking financial system.

The MENA region consists of a diverse group of countries; some of them are among the poorest in the world and others among the richest (oil exporters). This region has achieved significant changes in terms of exchange and the situation of both its current account and its external financing needs. In spite of the recent developments, the global markets of raw materials have had a negative impact on the region economies. However, although these mutations have been produced in a period of deterioration of the external growth and international finance, the gross domestic product of the region remains unchanged in 2008.

Concerning the financial development, retaining the main indicators of financial development, the results show that MENA countries have recorded a more developed financial system in the last decade. These countries have not been particularly exposed to the international financial crisis of 2008 because of their limited integration into the global financial institutions.

This article seeks to position Morocco among the countries of MENA region, regarding the financial development issue. First, we are going to determine the evolution of some development indicators according to the field's literature, then construct a *Global index of Financial Development* (GIFD) that will enable us to conduct clearer comparison between these countries.

The solution to this problematic issue necessitates particularly answering to the following questions:

1. After examining the indicators, could we say that MENA countries have a developed financial system?
2. What position does Morocco occupies in MENA region concerning the development of its financial system?

Two main assumptions were put forward in order to answer these questions:

- **H₁:** MENA countries still live its embryonic stage regarding the development of their financial systems.
- **H₂:** Morocco owns one of the most developed financial systems in the region.

2. Literature Review

The economic growth can be defined as the continuous increase over time of the goods and services' volume (quantity and/or quality) produced per capita in a certain economic space.

The ultimate purpose of any economy is to promote its progress. Thus, several empirical studies have confirmed the existence of a strong relation between financial development and the levels of income and economic growth of the countries. Otherwise, the direction of this causality between the two parameters has not been resolved and remains dependent on other variables such as indicators of financial development, estimating methods as well as the quality of the used Data. In other words, financial development can be an engine of economic growth as it can be a result of the latter. Despite this ambiguity, public authorities, realizing the benefits of financial openness, should ensure the creation of favorable conditions for the development of the financial system; eliminating the conditions of financial repression.

Theoretical studies, summarizing the ideas of the founders of the theory of financial liberalization, consider savings as a necessary condition for productive investment and economic growth. This relationship has been recognized in the literature for several decades by the predecessors Gurley and Shaw (1960) and Goldsmith (1969). Explicitly or implicitly, we find in the studies of these authors and others⁵ the idea that an efficient financial system can lead to an economic growth. According to these authors, the major contribution of the financial system in the real economy lies in the fact that it ensures the functioning of an efficient and scalable payment system, which mobilizes savings and improves its allocation to the investment thanks to the real positive interest rates. Furthermore, the financial system with a necessary presence of macroeconomic stability makes the

⁴ International monetary fund

⁵ Fry (1988-1989), Thornton (1991-1994), King & Levine (1992-1993) and others.

operation of the financial intermediation and the allocation of financial resources more efficient by keeping down the costs of intermediation and information.

Thus, the active financial intermediaries adapt financial assets to the potential needs of savers and investors, often divergent, while reducing the information asymmetry between lenders and borrowers and adjusting the offer and demand for funding to a higher level by increasing as well the amount of the invested savings.

Economies in the process of Development, such as Morocco, are generally classified as a “debt economies” where the largest share of external financing of companies is done through the financial intermediaries. The financial markets appear when companies reach levels of development in which firms can sell securities to financial intermediaries, but also directly to investors. The creation of these markets has the advantage of providing investors and savers with a richer battery of financial assets (it participate in the financial diversification). This quality enables them to have a better pooling of risks and limits somehow the monopoly of financial intermediaries which ; in the absence of competition, encourages companies to make non innovative projects with little risks, by taking large rents (Khan et Senhadji , 2003).

The fierce competition leads the banks to raise the interest rates in credit to retain or attract the deposits, which tend to reduce their margin. This is often considered as favorable to the development of savings and investment. Nevertheless, it is also possible that the reduction of margins will cut the value attached to the banking privilege (given the mandatory minimum ratio between capital and risk assets). This decrease may encourage banks to increase their performance by acquiring riskier assets, with a speculator behavior (Hellmann, Murdoch and Stiglitz, 2000). This is why; controlling interest rates on deposits can be very useful. Certainly, better regulation and banking supervision are necessary to prevent this behavior qualified on banks part, but their implementation is generally beyond the available expertise in developing countries (Andersen and Tarp, 2003)⁶.

Gurley and Shaw (1960), McKinnon and Shaw (1973) have developed an analytical framework in which financial repression is the backdrop. According to these two authors, the government intervention in the functioning of financial markets discourages savings, leads to credit rationing and non-optimal resources allocation.

If the State fixes arbitrarily real interest rates (through the setting of nominal interest rates) below their market equilibrium values, it can reduce the economic growth as follows:

- This reduces the amount of funds available for investment (savings) through the decrease of bank deposits in favor of current consumption ;
- This affects the quality of investment by the modification of financial intermediaries behavior to the extent that banks are forced by the government to finance projects in low yields (priority sectors ...)
- Fixing investment below its optimum level ;

Indeed, liberalizing the financial sector and reviewing the level of real interest rates on deposits (an increase in nominal rates or a decline of inflation) will stimulate the accumulation of savings and therefore investment. This should also help increase the bank intermediation with reduced intermediation costs between lenders and borrowers through realizing economies of scales. However, further studies within the same logic came few years later to manifest this purpose, essentially the works of Galbis (1977), Kapur (1976-1986), Mathieson (1978-1979), Vogel and Buser (1976) Fry (1988), YJCho (1988), and N.Roubini X.Sala-i-Martin (1992), who had a primary mission to analyze the original contributions of MacKinnon (1973) and Shaw (1973). They conclude that if the financial liberalization promises the best, it will conduct the countries that have adopted this idea to serious problems. The financial crisis that began in Thailand in the summer of 1997 and the international financial crisis of 2008 are among the other limitations that attract the attention of researchers.

3. Methodology

3.1. Empirical Methodology

As a methodology of our study, we have selected four countries in MENA region (Algeria, Egypt, Morocco and Tunisia), mainly due to the lack of data concerning other countries. For that reason, the period of the study has lasted for 33 years from 1980 to 2012 divided into three periods; (1980-1990), (1991-2005) and (2006-2012). For consistencies sake, our data was taken from the database of the World Bank⁷ and the International monetary fund⁸. The empirical study uses a battery of financial development indicators following the literature on the subject and as a basis for the progress representation of these variables. A *global index of financial development* will be built in order to facilitate the comparison between countries of the region.

⁶ S.guillaumont Jeanneney et K.R.Kpodar, « Développement financier, instabilité financière et croissance », CERDI, March 2004.

⁷ (WDI : world development indicators 2013)

⁸ (World Economic database Outlook. october.2014)

3.2. Measurement Indicators of financial development

3.2.1. M_1 / M_2 ratio

The money supply has several components that are classified according to the degree of liquidity. $[M_1]$, which represents the actual cash availability that contains scriptural money and trustee. It is indeed, all banks notes and coins in circulation are deposited without forgetting checks. The second aggregate, which may be designated by $[M_2]$ is the money supply at large definition. It is made in addition to the fiduciary and scriptural money contained in the first aggregate, savings bonds, term deposits and industrial savings as well as savings accounts.

The development of financial systems over time can be examined using the $[M_1/M_2]$ ⁹ ratio. It provides information about the attraction of savings by the financial sector. The more confidence in the banking system increases, the more financial savings products become available and the ratio tends to decrease, since savings pass from short period to long time savings¹⁰.

3.2.2. M_2/PIB ratio

The liquidity ratio $[M_2/GDP]$ ¹¹ is the most widely used indicator in the literature (King and Levine, 1993a; World Bank, 1989 McKinnon (1973). This indicator takes into consideration the payment's means available in the economy. It tends to increase when the financial system develops and when the range of savings instruments expands as well as when liquidity is increasing in the economy, and decreasing when non-banking savings forms are used (informal savings). This variable reflects the volume of financial services available in the economy and explains financial deepening. Among the work that refers to this kind of ratio, we can refer to Leite study about sub-Saharan Africa (2001)¹². However, it is necessary to pay attention to a disadvantage of this indicator. Indeed, a high level of this ratio is supposed to represent high liquidity of the system. But in some cases, this ratio may decrease as the financial system develops. This happens when the economic agents have other alternative long-term investment rather than short-term liquid investments.

3.2.3. Domestic credit to private sector / GDP

The ratio of credit granted to the private sector on GDP¹³, $[CSP/GDP]$ is related to the quantity and the quality of the investment. It reflects the control of the crowding out effect of the public sector with the private sector. Its high level reflects, the effectiveness of the management of bank liquidity, especially in what concerns default risk¹⁴.

3.3. The model and the indicators measurement

The construction of a global index of financial development for MENA countries refers to the method of calculation defined by Demirguc-kunt and Levine (1996) and A.Chouchane Verdier (2004). This index resumes the level of financial development of the countries although some economists (Levine, 1997; DE Gregorio & Guidotti, 1995) reported in their studies the difficulty of assessing it.

To measure the level of financial development of financial intermediaries, three indicators were considered:

1. $[M_2/GDP]$, noted M_2 .
2. $[CSP^{15}/GDP]$, noted CSP.
3. $[DCPFS^{16}/GDP]$, noted DCPFS.

The construction of this index allows us initially to rank those countries in a descending order of their financial development and secondly to analyze the evolution of this index over time. Thus, periods of the study were not chosen at random; the first period (1980-1990) is the period before starting reforms, the second (1991-2005) is considered as the ambiguous period, where some countries had to improve their reforms and the last period (2006-2012) where we can clearly appreciate the fruits of reform processes of financial systems.

⁹ Examination of the ratio over time can be a good indicator of the "speed" with which the financial sector is developing.

¹⁰ SAMOUEL Beji, « Financial development for the South méditerranéen sea countries in a context of globalisation », thèse de l'université Paris 13, décembre 2009.

¹¹ In developing countries, usually an increase in this ratio could be explained by the monetization of transactions by the increase in the volume of bank deposits (the degree of financial intermediation) .

¹² Brahim GANA, Identification des principaux indicateurs de développement financier en Algérie par la méthode d'analyse en composantes principales (ACP), mars 2013.

¹³ Gross domestic Product

¹⁴ Brahim GANA, Identification des principaux indicateurs de développement financier en Algérie par la méthode d'analyse en composantes principales (ACP), mars 2013. Risque qu'une perte financière soit causée par l'incapacité d'un emprunteur d'honorer ses engagements de paiement des intérêts ou de remboursement de la créance.

¹⁵ Credit to private sector.

¹⁶ Domestic credit provided by financial sector.

The calculation of the index was implemented in two stages. For each country -i-, we calculated 3 standardized indicators X_j^i ($i = 1, \dots, 4$ et $j = 1, \dots, 3$) corresponding to the M_2 , CSP, and DCPFS variables .

$$X_j^i = \left[\frac{X_{j-i}^i - \bar{X}_j}{\bar{X}_j} \right]$$

Where, $\bar{X}_j$ is the arithmetic mean of the indicator -j- on the 4 countries. The numerator; is the difference between country -i- and the average of countries in MENA region; is positive when the country has a higher indicator than the average of the region, negative otherwise. The Expected results allow us to figure out easily the situation of the country in question. Thus, once calculated the X_j^i for each country, the global index of financial development corresponds finally to the arithmetic average of the three indicators.

$$Y^i = \frac{1}{3} \sum_{j=1}^3 X_j^i$$

4. Discussion

4.1. The progress of some indicators of financial development

4.1.1 The evolution of the ratio M_1/M_2

Following the evolution of the $[M_1/M_2]$ ratio for the four countries in MENA region in the Figure n°1 below, we notice remarkable decrease in this ratio between 1980 and 2013. Furthermore, several observations can be drawn for some countries. Thus, until 2006, Morocco is the country that has had the highest ratio, which explains the prevalence of the available monetary mass $[M_1]$, explaining also the extent of the attractiveness of savings by the financial sector. This ratio is expected to decline if an important trust is established for the banking sector, where products of savings becomes largely available, moving from a short period of savings to a long time savings. Moreover, Algeria has taken the first place, since 2006; with a $[M_1/M_2]$ ratio exceeding 65 % followed by Morocco 60% then 42%, 30% for Tunisia and Egypt respectively. However, the examination of this ratio alone is not sufficient to explain the level of financial development of a country. We will complete our analysis using other variables.

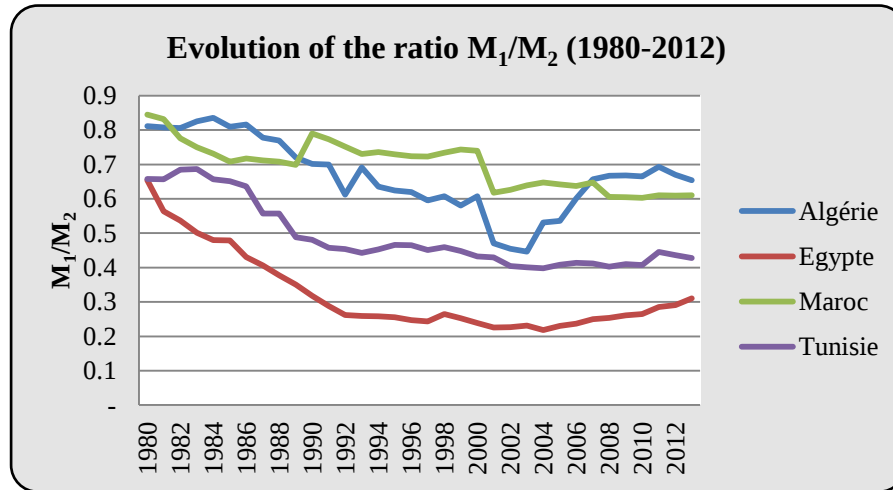


Figure n°1: Evolution of the ratio M_1/M_2 during the period 1980-2012

4.1.2 The evolution of the ratio M_2/GDP

The ratio $[M_2/GDP]$ as mentioned above is an indicator that explains both the volume of financial services available to the economy and the financial deepening. The latter tends to increase when the financial system is in the process of development and when the range of savings instruments widens. However, it decreases when some forms of savings, which are not placed in banks, increase.

According to the Figure n°2 below, Morocco ranks first in terms of the share of the monetary mass $[M_2]$ out of the gross domestic product. Its ratio has increased from 40% in 1980 to even 110% in 2012. This result should have some explanations; the progress curve of this indicator witnesses a positive growth throughout the period with stronger growth since 2005. However,

continuous improvement of the ratio $[M_2/GDP]$ explains the increase of bank deposits (financial intermediation) and as a result probably the increase of the credit supply.

Egypt ranks second with a ratio of around 80 % in 2012, while it was around 60% in the early 1980s. This improvement is certainly important, but we notice a nonlinear evolution of this indicator, having experienced more substantial results in 1987 and 2003 with 95% of gross domestic product. For Algeria and Tunisia, they have recorded a consistent positive growth of this indicator since the 1990s, but this development is still very slow; the ratio increased from 45% to only 60% in 2012.

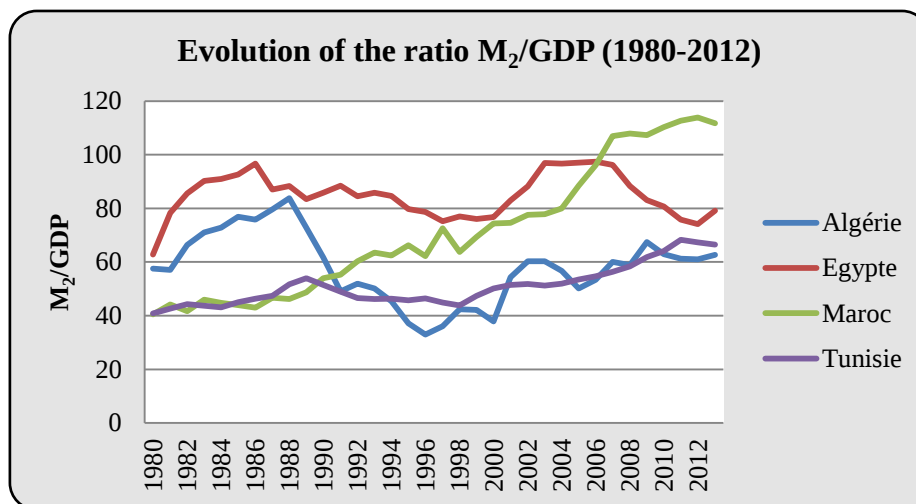


Figure n°2: Evolution of the ratio M_2/GDP during the period 1980-2012

4.1.3 Evolution of the ratio CSP/GDP ¹⁷

This ratio provides information on the quantity and quality of private investment in the country. A first reading of the Figure below shows that Morocco and Tunisia are the countries that have the highest ratio of credit granted to the private sector /GDP; it reached 70 % in 2013. Furthermore, the evolution of this indicator during period of our study was significantly heterogeneous for both countries. Tunisia initially recorded a ratio of 38% in the early 1980s to reach 70 % in 2013 as shown above. Morocco, in contrast, witnessed a spectacular progress with a slow ratio in 1980, which moved from 15% in 1980 to 70% in 2013. The important questions also arise in the case of Algeria with 70% in 1986, which decreased to almost 15% in 2013, in the same way, Egypt achieved a remarkable growth between 1980 and 2000 (a ratio of 55%), then suffered fall since that date until 2013 to reach 28%.

Indeed, we see consequently that Tunisia and Morocco; going back to the growth of their ratios over time, increased successfully the quality and quantity of private investments due to the increase in the credit supply given by the financial/banking sector. This relatively high level of this ratio in 2013 particularly (70%) leads us to notice the good management of the bank liquidity, namely in regard to the assessment of default risk¹⁸.

¹⁷ Credit to private sector reported to gross domestic product

¹⁸ Risk that a financial loss due to the failure of a borrower to meet its obligations to pay interest or repayment of the debt : <http://www.iotafinance.com>

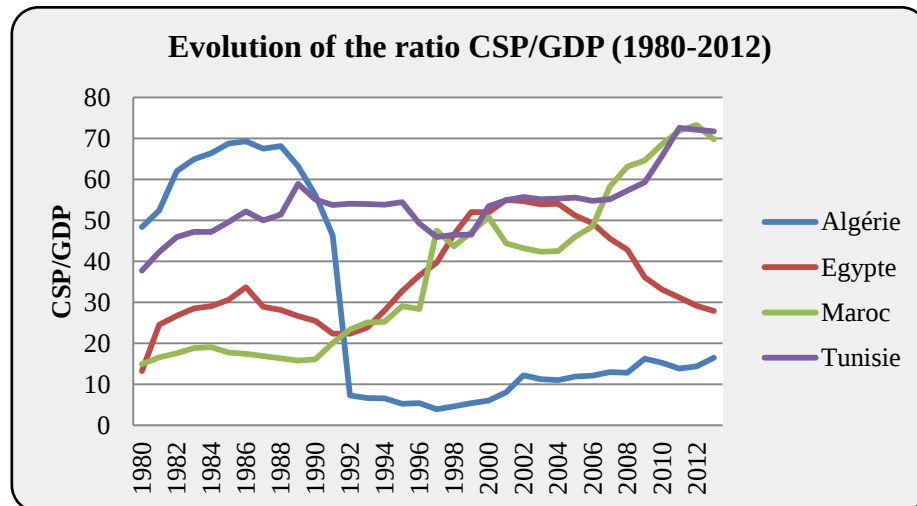


Figure n°3: Evolution of the ratio CSP/GDP during the period 1980-2012

4.2. The global index of financial development (GIFD)

The Indexes representing the financial development of the countries have been calculated for 4 periods: (1980-1990), (1991-2005), (2006-2012) and (1980-2012) as the overall period.

After calculations on the period (1980-2012), three categories¹⁹ of countries were found:

- One country with a low level of financial development, Algeria, with an index of -0.2553
- One country with an acceptable financial development, Morocco, with an index of -0.0084
- Two countries, which are financially developed Tunisia and Egypt with 0.0907 and 0.1730 respectively.

Table 1. The evolution of GIFD for MENA countries.

	General period		First period		2 nd period		3 rd period	
Country	1980-2012	Rank	1980-1990	Rank	1991-2005	Rank	2006-2012	Rank
Algeria	-0,2553	4	0,2475	1	-0,4556	4	-0,6654	4
Egypt	0,1730	1	0,1306	2	0,2676	2	0,0678	3
Morocco	-0,0084	3	-0,3868	4	0,0466	3	0,4670	1
Tunisia	0,0907	2	0,0086	3	0,1413	1	0,1305	2

Following the expected results in the above table, we can draw several conclusions about the evolution of financial development of the four countries. First, Algeria achieved throughout this period almost a very low index of financial development, except in the period 1980-1990, where it ranked first with an index of 0, 24. Besides, this indicator in Egypt has been declining continuously throughout the period to reach 0.06 by the end of the period after being ranked first in the period 1991-2005 with an index of 0,26. However, Tunisia left the first rank to Morocco during the period 2006-2012; during which Morocco recorded its best result (0.46) after being ranked as the fourth country during the first period with (-0.38). These results justify the effort made by the country to improve its financial system in the context of the financial liberalization policy.

¹⁹ The average of financial development is around zero , low if it is below - 0.013 and high above 0,013 , which is a distribution calculated by dividing by six , the sum of absolute differences of the lowest financial development index and the highest one.

Table 2. The evolution of GFDI between the two extreme periods

Amelioration of GFDI	Rate	Deterioration of GFDI	Rate
Morocco	0,8539	Algeria	0,4179
Tunisia	0,1218	Egypt	0,0627

The progress of the financial development index over time determines two categories of countries. The first category includes countries that have improved their financial development indicators; namely Morocco and Tunisia and the second category for the countries that have experienced a delay in this issue. Morocco is considered as the country that has significantly improved its financial development index with an increase of more than 0.85 points.

5. Conclusion

The review of the index of financial development leads us to draw good conclusions for all the countries of this study. Going back to the questions stated in the problematic, we can confirm the hypothesis, which advocates the weak financial development of MENA countries. Algeria and Egypt caused a significant delay of the development of financial intermediaries during the period 1980-2013; 0.41 and 0.06 respectively. Tunisia recorded a low growth of (0.12); whereas Morocco is the only country that succeeded in achieving good results between 1980 and 2013; moving from an index of (-0.38) to (0.46) in 2013 to rank first after 2005. This result confirms the authenticity of the second hypothesis, stipulating the right place of Morocco among those countries regarding the level of the development of its financial system.

Considering Morocco as one of the most powerful member among MENA countries, its financial sector has achieved continuous improvements in terms of the improvement in its financial development indicators. Indeed, the conditions of the bank financing, financing costs and debts management... have been largely improved. Thus, it turned out clearly through our results that the progress made by Morocco in the modernization and development of its financial system, in order to improve the financing of productive sectors, are highly visible in relation to MENA countries, especially for Egypt and Algeria. However, major challenges have to be considered in terms of deepening its financial system. It can be summarized in improving the accessibility of Small Medium-sized companies to financing, transparency and modernization of the information system. Besides, it improves the liquidity of financial markets, the integration of the informal sector and diversification of financing instruments as well as the promotion of the competition to decrease the costs of global financing.

In fact, despite the efforts of the Mediterranean countries to develop their financial sector by integrating in the financial liberalization stage, these countries still far from the financial development level achieved by the developed countries.

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Table n° 3: The global index of financial development during the 4 periods

1980-2012		Arithmetic mean			Normalized means			GIFD	Rank
Country name	Code	M2/GDP	CSP/GDP	DCPFS/GDP	M2/GDP	CSP/GDP	DCPFS/GDP		
Algeria,	1	0,577962279	0,284707715	0,440416936	-0,121543647	-0,301967064	-0,342553641	-0,255354784	4
Egypt	4	0,850438915	0,359553976	0,901108526	0,292599006	-0,118462534	0,345158352	0,173098275	1
Morocco	9	0,69786752	0,375884666	0,664759879	0,060702713	-0,07842372	-0,007658592	-0,008459867	3
Tunisia	11	0,505448966	0,611339496	0,673275841	-0,231758072	0,498853318	0,005053881	0,090716376	2
X^{20}		0,65792942	0,407871463	0,669890295				-1,38778E-17	
1980-1990		Arithmetic mean			Normalized means			GIFD	Rank
Country name	Code	M2/GDP	CSP/GDP	DCPFS/GDP	M2/GDP	CSP/GDP	DCPFS/GDP		
Algeria	1	0,70498751	0,625330251	0,812782178	0,137289698	0,505422698	0,099793451	0,247501949	1
Egypt	4	0,856379205	0,268254942	1,00842947	0,381515607	-0,354201917	0,364528107	0,130613932	2
Morocco	9	0,4540624	0,193079384	0,474640346	-0,267504059	-0,535179872	-0,357753703	-0,386812544	4
Tunisia	11	0,464106261	0,574876071	0,660274639	-0,251301247	0,38395909	-0,106567855	0,008696663	3
X		0,619883844	0,415385162	0,739031658				8,23994E-18	

Source: Own elaborations, the World Bank data, WDI 2013

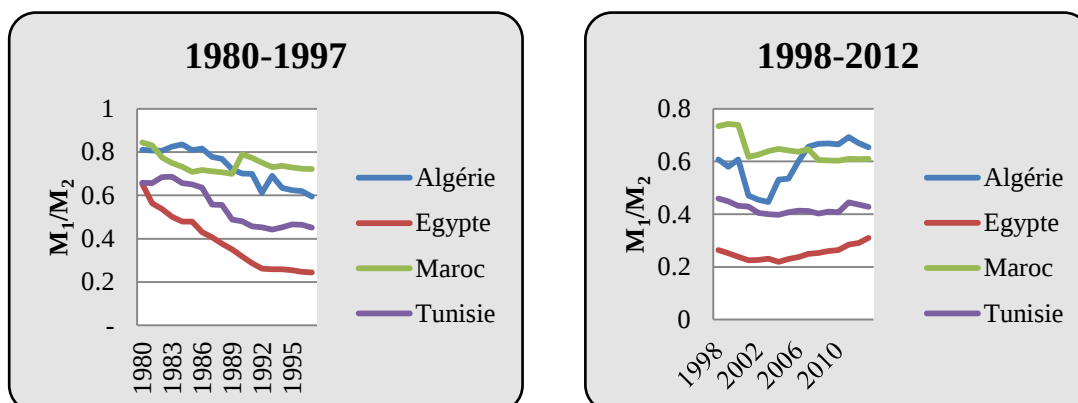
²⁰ X is the arithmetic mean of indicators for all the countries of the region.

1991-2005		Arithmetic mean			Normalized means			GIFD	Rank
Country name	Code	M2/GDP	CSP/GDP	DCPFS/GDP	M2/GDP	CSP/GDP	DCPFS/GDP		
Algeria	1	0,471325543	0,101278646	0,395667336	-0,246020742	-0,733705852	-0,387276236	-0,45566761	4
Egypt	4	0,845897516	0,416274631	0,875181991	0,353181874	0,094519946	0,355292073	0,267664631	2
Morocco	9	0,698976123	0,386125755	0,649978545	0,118151788	0,015248849	0,006545814	0,046648817	3
Tunisia	11	0,484270362	0,617625838	0,662178429	-0,22531292	0,623937056	0,025438349	0,141354162	1
X		0,625117386	0,380326218	0,645751575				-1,11022E-16	
2006-2012		Arithmetic mean			Normalized means			GIFD	Rank
Country name	Code	M2/GDP	CSP/GDP	DCPFS/GDP	M2/GDP	CSP/GDP	DCPFS/GDP		
Algeria	1	0,606858493	0,142506019	-0,048836444	-0,229901227	-0,686861724	-1,079672431	-0,665478461	4
Egypt	4	0,850835742	0,381479627	0,788018187	0,079704031	-0,161748582	0,28558345	0,0678463	3
Morocco	9	1,078614278	0,641204917	0,99519343	0,368753246	0,40896366	0,623571922	0,467096276	1
Tunisia	11	0,615798796	0,655168429	0,71748647	-0,21855605	0,439646646	0,170517059	0,130535885	2
X		0,788026827	0,455089748	0,612965411				7,63278E-17	

Source: Own elaborations, the World Bank data, WDI 2013

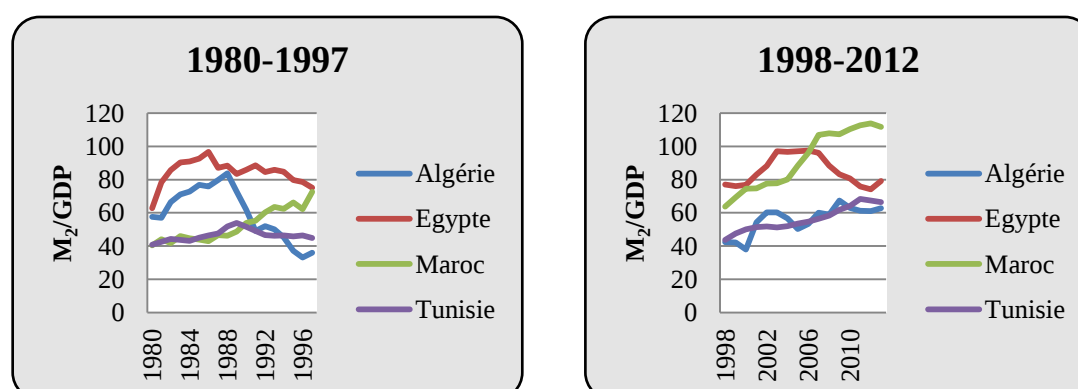
Appendix

Figure n°4: Evolution of the ratio M_1/M_2 during the periods 1980-1997 and 1998-2012



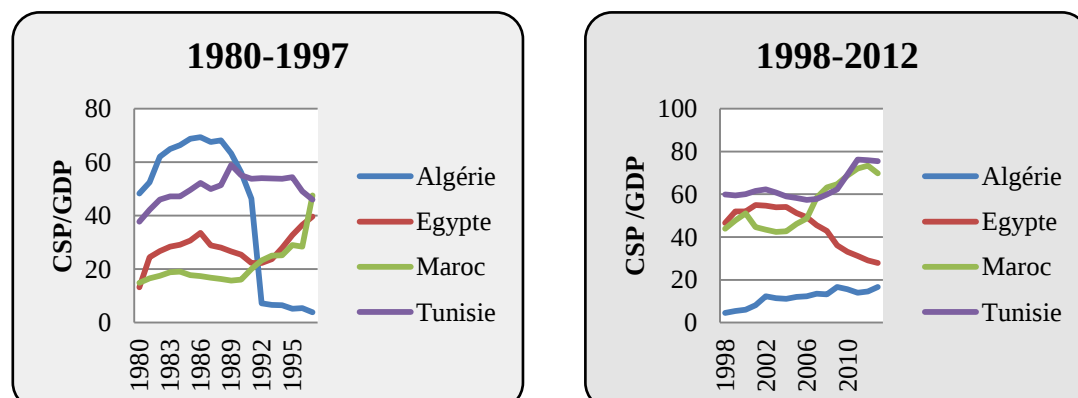
Source: Own elaborations, the World Bank data, WDI 2013.

Figure n°5: Evolution of the ratio M_2/GDP during the periods 1980-1997 and 1998-2012



Source: Own elaborations, the World Bank data, WDI 2013.

Figure n°6: Evolution of the ratio CSP /GDP during the periods 1980-1997 and 1998-2012



Source: Own elaborations, the World Bank data, WDI 2013.