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Examining the Relationship Between Macroeconomic Indicators and Stock Market Development in Morocco

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ABSTRACT

The literature is still debating the key macroeconomic variables influencing the stock market development. This paper attempts to provide an empirical study to identify the macroeconomic conditions required for the stock market development in a developing country, in this case, Morocco. The goal is to determine whether macroeconomic variables can improve Moroccan stock market development.

The purpose of this study, which covers the period 1996-2020, is to determine the macroeconomic factors that contribute the Moroccan stock market development. It examines the impact of economic growth, banking sector development, stock market liquidity, foreign direct investment and macroeconomic stability measured by the Barro's Misery index. The autoregressive distributed lag approach (ARDL) was estimated, to get both the short and long run coefficients of the macroeconomic variables that determine Moroccan stock market development.

The results reveal that stock market liquidity, banking sector development and foreign direct investment effect positively Moroccan's stock market development, but macroeconomic stability effects it negatively. While the economic growth does not impact it, whether for the short or long run.

There have been no relevant studies that have focused on the macroeconomic determinants of the Moroccan stock market in the short and long terms, despite the fact that theoretical and empirical literature offers diverse perspectives on which factors can determine stock market development.

By examining the macroeconomic variables that contribute to Moroccan stock market development and introducing the misery index to assess the effects of macroeconomic stability, this study seeks to enrich the literature.

Keywords: Macroeconomic indicators, Stock Market Development, Morocco, ARDL approach.

JEL codes : C19, E44, G10

1. INTRODUCTION

Due to its role in financing the economy, stock market development (SMD) has received significant attention from policymakers and economists. It is a preferred option for financing economic activity and is seen as an indicator of the success of the financial methods adopted by some financial institutions (Demirgüç-Kunt and Levine 1996; Loayza and Ranciere 2006; Levine et al. 2000).

Therefore, the stock market is essential for the economy because it may direct savings into the industries that are most productive. On the one hand, investors may consider the stock market as one of the main

sources of project financing. On the other hand, the companies listed benefit not only from significant financial resources but also from their independence from the banking system, since the repayment of bank loans can result in a financial imbalance for them (Ho and Odhiambo, 2018). Additionally, publicly traded companies benefit from knowledge of the financial environment, which helps them to improve their business and financial relationship with banks. Therefore, it is possible to conclude that the stock market provides businesses with a very wide range of financing options for their operations and future development plans.

For savers, buying or selling shares on the stock exchange is easier to execute than other types of transactions, similar to buying or selling real estate because selling a house or a car can take more than a month but stock market financial transactions don't even take a day (Riaz et al., 2020). Additionally, savers have the option of selecting from a list of companies based on expected returns or even handing over control of their portfolio to specialized companies. Therefore, this role of efficient capital allocation is due to the degree of effectiveness of the stock market (Baliamoune-Lutz, 2008).

According to Bloomberg's calculation, the world's stock market capitalization currently represents 108% of global GDP, compared to 120% at the end of 2007. This means that the value of all listed companies on all stock exchanges exceeds the total amount of wealth produced worldwide. This indicates that stock markets have developed into a legitimate source of financing for the economy.

As a result, the question on what factors can affect SMD is the subject of a rather rich literature review. Ho and Njindan Iyke (2017) state that the theoretical literature assessment highlights the significance of two key groups: macroeconomic and institutional indicators (Yartey, 2010). On the one hand, the literature argues that the institutional indicators could have a positive or negative effect on SMD's level of integration and legal implications. Corporate governance, investor protection, trade openness, and financial liberalization are the main institutional indicators that positively affect SMD (Ho 2018; Ho 2019; Shi et al. 2021).

On the other hand, several researches (Naceur et al. 2007; Shahbaz et al. 2016; Ho 2018; Ho 2019) focus only on macroeconomic indicators. According to these studies, SMD is driven by income level and stock market liquidity, but it can also be driven or inhibited by financial sector development and interest rate. Macroeconomic stability, however, has a negative impact on SMD. From these studies, SMD is especially affected by macroeconomic factors.

To help Morocco transition from a debt-based economy to a financial market economy, the Moroccan stock market underwent a major modernization process. In order to establish the foundation for a modern financial market that approaches worldwide norms in terms of structure, management, and control, the Moroccan authorities began reforming the Moroccan stock market in 1993. The stock market is still suffering liquidity issues in spite of its reforms; volumes are historically quite low and have, of course, decreased recently, while being supported by large initial public offerings (IAM, Real Estate, etc.) and the presence of foreign investors. It is reasonable to inquire what factors are producing the liquidity problem and what factors are solving it in order to comprehend this liquidity issue.

There have been no pertinent studies that have focused on the macroeconomic variables that increase Moroccan SMD, despite the fact that theoretical and empirical literature offers diverse perspectives on which factor can drive SMD. The empirical contributions of this study might then stimulate academics' interest in the factors that influence the SMD in developing countries, because there is no consensus on what indicators can determine the SMD in developing countries, using the misery index to assess the effects of macroeconomic stability.

2. LITERATURE REVIEW

Given its role in the financing of the economy, the stock market has recently attracted the attention of decision-makers. It serves as more than just a performance space for the exchange; it also serves as a place where investors and capital seekers can interact, making it possible to effectively contribute to the allocation of credit in an economy (Levine and Zervos 1996; Singh, 1997).

For that purpose, several researchers have been focused on the indicators that determine SMD. The contributions of Garcia and Liu (1999) identified the macroeconomic indicators that determine SMD, on a sample of 15 industrialized and developing countries covering the period 1980-1995.

The results show that macroeconomic stability has no bearing on SMD and that the main determinants of SMD are income level, savings rate, and stock market liquidity.

According to the study conducted by Yartey (2010), for a sample of 42 emerging economies covering the period from 1990 to 2004, stock market liquidity, income level, banking sector development, domestic investment and private capital flows are the main variables which determine SMD in these economies.

As for Evrim-Mandaci et al. (2013) focused on the macroeconomic factors that favor SMD in 30 industrialized and emerging economies over the period from 1960 to 2007, the findings indicate that bank credit to private sector, remittances and foreign direct investment impact positively SMD.

Based on dynamic panel data of European countries between 1995 and 2011, Şükrüoğlu and Nalin (2014) argued that income, liquidity ratio, and saving rate have favorable influence on stock market development, but the monetarization ratio and inflation have negative effects.

On secondary data for the period 1974-2010, Shahbaz et al. (2016) showed that macroeconomic indicators such as economic growth, financial sector development, investment and inflation are the main factors which determine SMD in Pakistane, however, the trade openness decreases it.

For the case of Philippines, Ho and Odhiambo (2018) analyzed the causes of SMD on quarterly data between 2001 and 2016. The findings confirm that exchange rate and banking sector development have significant and positive effect on SMD. In contrast, trade openness impacts it negatively.

Ho's (2018) results, for South Africa, covering the period from 1975 to 2015, argued that banking sector development and economic growth increase SMD, whereas real interest rate and inflation rate decrease it, also, trade openness effects negatively SMD. However, for the case of Malaysia, covering the period 1981-2015, Ho (2019) argued that economic performance and trade openness impact positively SMD, in the long run, but banking sector development impacts it negatively.

Based on quarterly secondary data for Hong Kong, during the period 1992-2016, Ho and Odhiambo (2020) examined the macroeconomic indicators that increase SMD. The findings show that the development of Hong Kong's stock market is positively impacted by economic growth and financial development, while negatively impacted, both in the long and short terms, by the inflation rate and the exchange rate.

Shi et al. (2021) carried out a study that covered the period 1991-2014 in a sample of Southeast Asian economies. The study concentrated on institutional quality metrics and how SMD and volatility are affected by them. The panel co-integration test's findings demonstrate that over time, government size, regulation, trade freedom, and sound money all have a favorable impact on SMD.

In numerous studies on SMD determinants, stock market capitalization is employed as a dependent variable. The main studies are summarized in the following table (1):

Table 1: Key studies on stock market development determinants

Authors	Independent variables	Methodology and sample	Finding
Quartey and Gaddah (2007)	Income level, savings, banking credit to private sector, exchange rate and inflation	Johansen's co-integration procedure In Ghana (1991-2004)	- In the long run: income level, savings, banking credit to private sector and exchange rate influence positively SMD. -Inflation impacts it negatively
Yartey (2010)	Income level, stock market liquidity, financial development, private capital flows, investment, political risk, bureaucratic quality, law and order	GMM for 42 emerging economies (1990-2004)	-Income level, stock market liquidity, investment, financial development and private capital flows effect positively SMD. -The political risk, bureaucratic quality, law and order have also a positive effect on SMD
Evrim-Mandaci et al. (2013)	Bank credits to private sector, foreign direct investment and remittances	SUR estimation For 30 countries (1990-2007)	All the variables impact positively SMD.
Azam et al. (2014)	Foreign direct investment, saving, income, inflation, infrastructure facility, energy use	Ordinary least squares estimation In Romania (1990-2013)	Foreign direct investment, saving, income, infrastructure and energy usage have a positive effect on SMD
Shahbaz et al. (2016)	Economic growth, financial development, domestic investment, trade openness and inflation rate	ARDL approach In Pakistan (1974-2010)	- Financial development, economic growth, investment and inflation impact positively SMD. -For the trade openness impacts it negatively
Ho and Odhiambo (2018)	Economic growth, financial development, stock market liquidity, exchange rate, trade openness and inflation rate	ARDL approach In Philippines (2001Q4–2016Q4)	- Financial development and exchange rate impact positively SMD, in the short term; - Trade openness impacts it negatively, in the long term
Ho, S.-Y. (2018)	Financial development, income level, trade openness, real interest rate and inflation rate	ARDL approach In South Africa (1975–2015)	- Financial development and income level increase SMD, - Real interest rate and inflation rate decrease it
Ho, S.-Y. (2019)	Financial development, economic growth, foreign direct investment, trade	ARDL approach In Malaysia (1981-2015)	- Economic growth and trade openness impact positively SMD, in the long term.

	openness and inflation rate		- Financial development effects it negatively in the long term
Ho and Odhiambo, (2020)	Financial development, income level, stock market liquidity, exchange rate, inflation rate and trade openness	ARDL approach In Hong Kong (1992Q4-2016Q3)	- Financial development and income level increase SMD; - Exchange rate and inflation rate inhibit it in the long and short term. -Trade openness effects it positively in the long term, but negatively in the short term

Source: Author, on the basis of the literature review

3. CHARACTERISTICS OF MOROCCAN STOCK EXCHANGE MARKET

The stock exchange provides as a meeting location for buyers and sellers of financial products, and its primary function is to coordinate these meetings. In order to effectively handle financial operations, the stock market tries to control the exchanges between the issuing companies and the investors.

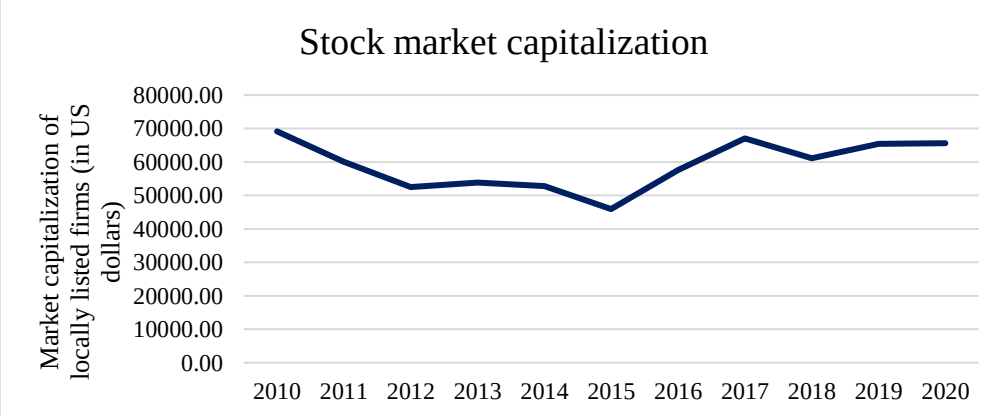
It should be mentioned that since its founding in 1929 until 1993, which represented a significant turning point in its history, Casablanca's stock market underwent a number of reforms.

These reforms have made it possible to establish the foundation for a contemporary financial market that is organized, managed, and controlled in a manner that is comparable to that of other countries. These reforms are organized along two axes: The Securities Ethics Council, which is in charge of guarding savers' interests and regulating the market, was established as part of the reorganization of the Moroccan stock exchange. New collective management financial instruments, such as the undertaking for collective investment in transferable securities, were also established.

Market capitalization defined as a share of GDP has been used to measure the SMD. It is determined by multiplying the number of shares that make up a listed company's share capital by the stock market price. As a result, changes in the company's share price are reflected in changes in the market capitalization.

According to the figure above (fig. 1), the Casablanca Stock Exchange's market capitalization does not exceed 70000 million US$. The market capitalization has been declining since 2008 until it began to rise in 2015. This was explained by the new stock exchange listings as well as by the capital increases of some local banks.

Fig. 1: Evolution of Moroccan stock market capitalization during the period 2010-2020



Source: Author's realization based on data from the World Bank

Table 2 indicates that the Moroccan stock exchange has grown in size. The market capitalization as a whole achieves a positive average, with a value of 59175. This means that during the last ten years, the Morocco's market capitalization has grown by an average of 59175 million US dollars. Market capitalization as a percentage of GDP normally varies by 55,53%. The recent IPOs as well as the capital increases of some local banks can also account for this.

Regarding stock liquidity, it is evident that it has not expanded at the same rate as market capitalization. The total value of stocks exchanged has increased by an average of 3732,34 million US dollars.

Additionally, during this time the turnover ratio declined significantly, but even though the domestic share turnover ratio varies, it generally has a positive average of about 6,35%.

While the number of listed firms fluctuates between 73 and 76 from 2010 to 2020, this means that the number of recent initial public offerings (IPOs) is extremely low, which suggests that the Moroccan stock exchange has challenging conditions for IPOs.

Table 2. Statistics on the Moroccan stock market (2010-2020)

Year	Market capitalization (million US$)	Market Capitalization (% GDP)	Stocks traded (million US$)	Turnover ratio (%)	Number of listed companies
2010	69152,11	74,18	6098,30	8,82	73
2011	60087,89	59,28	4092,52	6,81	75
2012	52479,84	53,41	3492,99	6,66	76
2013	53831,38	50,39	3236,76	6,01	75
2014	52746,80	47,92	3039,87	5,76	74
2015	45927,92	45,39	2919,00	6,36	74
2016	57579,72	55,73	3177,68	6,27	74
2017	67048,48	61,13	4227,43	6,30	73
2018	61080,78	51,72	3901,62	6,39	75
2019	65415,26	54,57	3260,54	4,98	74
2020	65574,81	57,16	3608,98	5,50	75
Mean	59175,00	55,53	3732,34	6,35	74,36

Source: Word Bank

4. RESEARCH METHODOLOGY

This study aims to identify what are macroeconomic indicators that determine Moroccan stock market development. So, the methodology adopted concerns the following techniques:

4.1 Variables' descriptions

To investigate the determinants of SMD, the following macroeconomic variables were being included (table 3):

Table 3: Variables' descriptions

Variable	Symbol	Description
Stock market development	SMD	In accordance with several studies (Garcia and Liu 1999; Quartey and Gaddah 2007; Yartey 2010; Ho and Odhiambo 2018; Shi et al. 2021), SMD is measured by market capitalization as a share of GDP.

		it is equal to the number of shares submitted by a listed company multiplied by its stock price
Economic growth	GDP	It measured by GDP per capita (Naceur et al. 2007; Manasseh et al. 2017; Shi et al. 2021). It is a GDP per capita yearly percentage growth rate calculated using constant local currency.
Stock market liquidity	SML	It measured by the value of shares traded as a share of GDP (Garcia and Liu 1999; Yartey 2010; Manasseh et al. 2017; Ho and Odhiambo 2018; Ho and Odhiambo 2020).
Financial development	CPS	It, often, measured by banking credit to private sector, as a share of GDP, (Garcia and Liu 1999; Yartey 2010 ; Evrim-Mandaci et al. 2013 ; Manasseh et al. 2017 ; Ho 2019).
Foreign direct investment	FDI	FDI strengthens the capital structure, promotes profitability, thus indirectly improving stock market fundamentals (Yartey 2010, Evrim-Mandaci et al. 2013; Azam et al. 2014; Ho 2019, Tsaurai 2018). It is used as a net inflow (% of GDP)
Macroeconomic stability	MS	According to several studies, the macroeconomic stability is measured by the Barro's Misery Index, which is the sum of inflation rate and unemployment rate, both of them have a negative impact (Welsch 2007; Iqbal and Nawaz 2010; Akçay 2018; Vasylieva et al., 2018).

Source: Author, on the basis of the previous studies

4.2 Data and specification

In order to carry out our study, we used secondary data, from 1996 through 2020, the World Development Indicators are the source for all the variables., because some variables are available only from 1996.

To identify the macroeconomic indicators which increase Moroccan's SMD, the following equation (1) will be estimated:

$$SMD_t = \alpha_0 + \alpha_1 GDP_t + \alpha_2 SML_t + \alpha_3 CPS_t + \alpha_4 FDI_t + \alpha_5 MS_t + \varepsilon_t \quad (1)$$

In the above Equation, SMD is the Stock Market Development, GDP indicates Gross Domestic Product per capita, SML refers to Stock Market Liquidity, CPS represents Domestic Credit to Private Sector, FDI refers to Foreign Direct Investment and MS indicates Macroeconomic stability

The coefficients α_1, α_2, α_3, α_4 and α_5 are, respectively, coefficients of the exogenous variables, α_0 and represents the intercept and $\boldsymbol{\varepsilon_t}$ refers to the error term.

4.3 Data analysis techniques

The long- and short-term variables that affect Moroccan's stock market's development were estimated in this study using the autoregressive distributed lag (ARDL) bounds test, which was developed by Shahbaz et al. (2012). The reliability of the ARDL model with small sample sizes has been demonstrated in various studies. (Pesaran et al., 2001). The ARDL technique requires more adequate implications than the Johansen model to verify the long run relationship between many variables in a small sample (less than 30 observations) (Nkoro and Uko2016).

While other models require that all variables be integrated in the same order, the ARDL technique can be employed when the variables are integrated in different orders (Pesaran et al., 2001). This model also has the benefit of allowing the series to have various optimal lags, which are not possible when using traditional co-integration techniques (Nkoro and Uko2016). Furthermore, ARDL bounds testing is thought

to be sufficient to concurrently adjust for residual correlation and endogeneity issues since it uses an appropriate lag order to record the data-generating method.

The following techniques will be applied to analyze the data: descriptive statistics; unit root tests; ARDL estimation and validation; long run relationship analysis and finally, the estimation of long and short-term coefficients.

4.4 RESULTS

The study focuses on the macroeconomic indicators that contribute to Casablanca Stock Exchange development. Then, it is crucial to examine the descriptive statistics of all variables and apply the unit root tests to verify if any variable is integrated in second order I(2), before beginning our study using ARDL technique.

4.5 Descriptive statistics

According to table 4, all variables show positive average returns. Market capitalization (SMD) has an average value of 47.06. This reveals that over the last 25 years, as a percentage of GDP, Morocco's market capitalization has grown by 47.06 on average.

For the normality of the data collected, the normality test was used to examine the normality hypothesis. From the following table (4), Market capitalization (SMD), credit to private sector (CPS) and Macroeconomic stability (MS) appear to be normally distributed. However, other variables are not normally distribution.

Table 4: Descriptive statistics

	SMD	GDP	SML	CPS	FDI	MS
Mean	47.06	2.49	7.62	54.84	2.51	11.76
Median	48.00	2.48	4.79	60.69	2.49	12.05
Max	85.19	10.75	29.32	71.64	7.16	14.51
Min	17.72	-7.43	2.36	26.48	0.74	8.22
Std. Dev.	18.35	3.36	6.53	12.81	1.37	1.79
Skewness	0.37	-0.52	1.83	-0.36	1.47	-0.15
Kurtosis	2.48	5.41	6.12	1.91	6.33	1.94
Jarque-Bera	0.86	7.17	24.12	1.78	20.58	1.25
Probability	0.65	0.03	0.00	0.41	0.00	0.53

The variance inflation factor (VIF) test was used to analyze the multicollinearity of the exogenous variables. This test aims to examine whether the estimated coefficients variance is inflated in the case of multicollinearity.

The variance inflation factor (VIF) test (table 5) reveals the absence of multicollinearity. As a result, the variances of the variables are not inflated, according to the values shown in the table 5, which indicate that there is no link between the exogenous variables.

Table 5: Multicollinearity Test

Variables	VIF	1/VIF
GDP	1.76	0.57
SML	2.94	0.34

CPS	10.24	0.10
FDI	4.76	0.21
MS	14.80	0.07

4.6 Results of unit root test

Although pre-testing for unit roots is not required for the ARDL co-integration technique, it should be performed to determine the number of unit roots in the series under study in order to prevent an ARDL model crash in the presence of an integrated stochastic trend of I(2) (Nkoro and Uko2016).

Phillips and Perron (PP) tests and the Augmented Dickey-Fuller (ADF) test were performed to examine whether the series were stationary (Dickey and Fuller 1979; Kim and Perron 2009). All results were being summarized in the following table (6). All variables are stationary after the first difference except for the GDP per capita (GDP) and Foreign Direct Investment (FDI) which are stationary in level.

Table 6: Results of unit root tests

Variables	Unit root test				Decision
	Level		First difference		
	ADF	PP	ADF	PP	
SMD	(0.108) [0.707]	(0.038) [0.659]	(-3.338) [0.002]***	(-3.317) [0.002]***	I(1)
GDP	(-1.072) [0.247]	(-4.347) [0.002]***	-	-	I(0)
SML	(-1.434) [0.137]	(-1.434) [0.137]	(-5.046) [0.000]***	(-5.049) [0.000]***	I(1)
CPS	(1.026) [0.914]	(1.195) [0.935]	(-4.363) [0.000]***	(-4.315) [0.000]***	I(1)
FDI	(-6.552) [0.000]***	(-6.503) [0.000]***	-	-	I(0)
MS	(-0.489) [0.493]	(-0.483) [0.495]	(-6.550) [0.000]***	(6.665) [0.000]***	I(1)

Note: ** and *** reveal, respectively, significance at 5% and 1% level; (t.stat.); [Prob.]

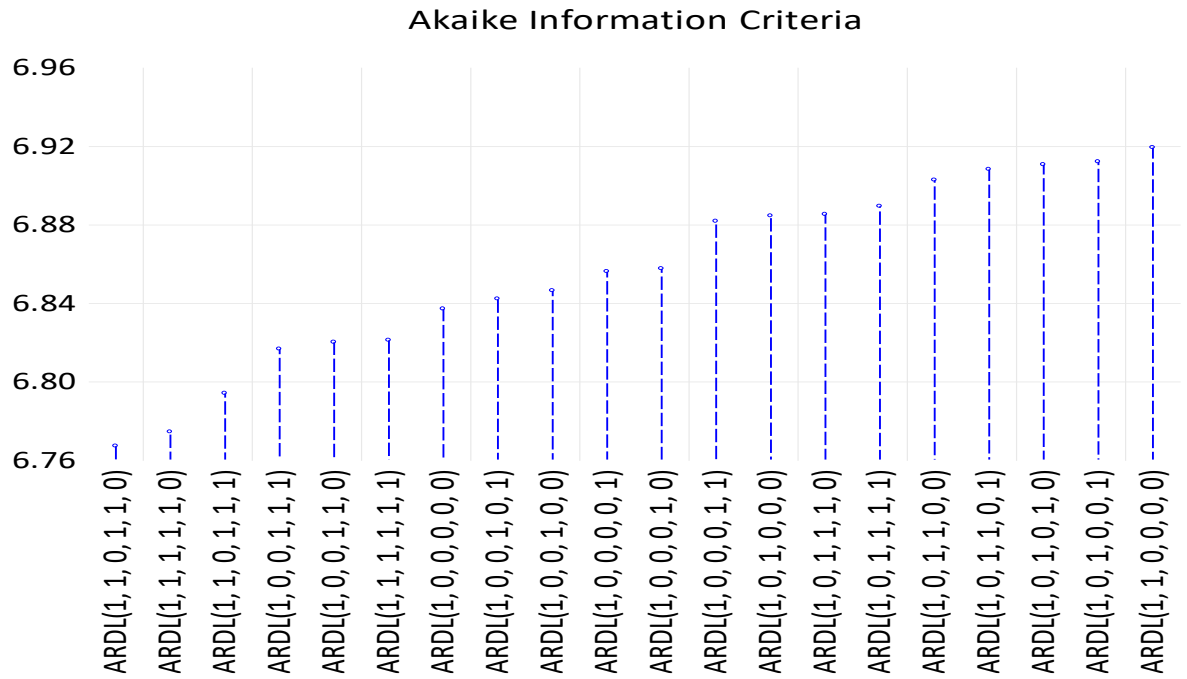
These unit root test results demonstrated that the Pesaran et al. (2001) ARDL co-integration procedure is suitable for examining the long-term relationship among the variables.

5. ARDL estimation and validation

The ARDL (1, 1, 0, 1, 1, 0) model for Morocco's stock market development was estimated using the Akaike Information Creteria (AIC). As depicted in Figure 2, this model provides the smallest possible

AIC value.

Fig. 2: Selection model



The findings of the residual diagnostic tests (table 7) demonstrate that the model does not exhibit an autocorrelation or heteroscedasticity of errors, which are also normally distributed.

Table 7 : Residual diagnostic tests

Diagnostic test	Probability	Result
Breusch-Godfrey test	0.91	Absence of serial correlations
Heteroskedasticity test: ARCH	0.96	Absence of heteroscedasticity
Ramsey's RESET test	0.98	The model is correctly specified
Normality test	0.85	The errors are normally distributed

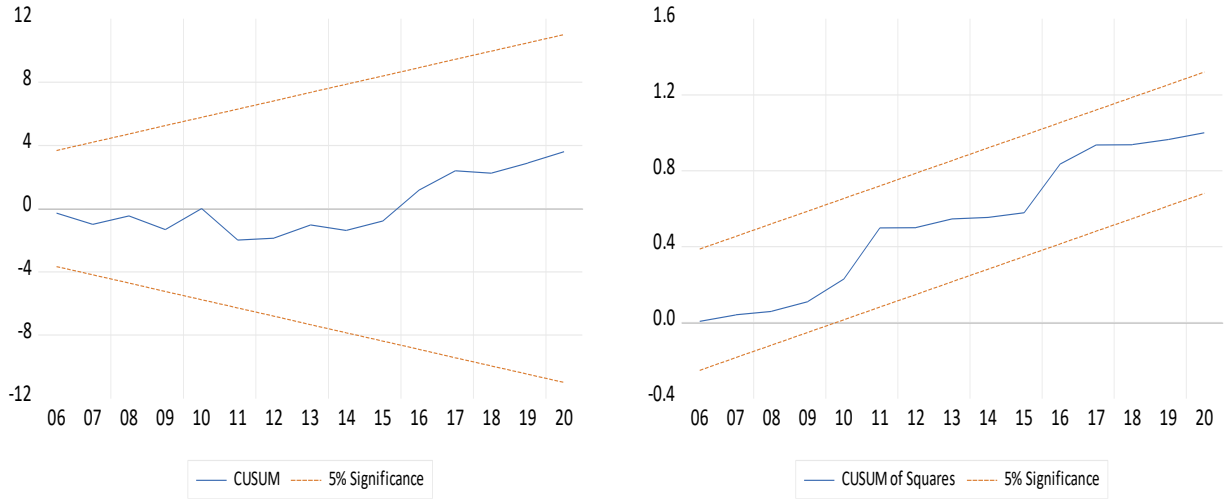
5.1 Stability test

The CUSUM test allows to detect random changes in the behavior of the estimated model which can be due to public policies.

In this study, we use CUSUM test and CUSUM of square test to analyze the stability of the ARDL (1, 1, 0, 1, 1, 0) model.

The following figure (fig.3) shows the result of the CUSUM test and CUSUM of square test. Except for the period of the CUSUM test for which we see a crossing of the confidence interval, the CUSUM statistic does not go outside its interval. We, therefore, reject the hypothesis of a structural change, within the 5 percent critical bound. It means that this model is stable as the both lines short- and long-term coefficients covering the period 1996-2020.

Fig. 3: CUSUM test and CUSUM of square test



After estimating the ARDL model and checking its robustness, the next step is to establish the bounds test according to the method of Pesaran et al. (2001). For this purpose, all observations will be directed towards Fisher's F and its location with respect to the lower and upper bounds.

5.2 Long run relationship

To test the existence or not of co-integration among variables, the econometric literature review provides many tests, of them Engel and Granger test (1987) and Johansen (1991) test.

On the one hand, Engle and Granger's co-integration test is performed between two variables which have the same integration order. On the other hand, Johansen's co-integration test is, also, applied on two variables integrated in the same order, unfortunately, it is not always the case in the practice.

Therefore, to remedy for the limitations of these tests, when the variables don't have the same integration order, Pesaran et al. (2001) test can be performed to test the long run relationship.

The value of F-stat (4,64 in the table 8) of the current observations is largely superior than the upper bound at the 1% threshold (4.21), so we can accept the presence of long-term relationship.

Table 8: ARDL bound test result

Model Estimated: SMD = f (GDP, SML, CPS, FDI, MS)		
F-statistics	4.64	
Level of significance	Lower limit value	Upper limit value
10%	1.81	2.93
5%	2.14	3.34
2.5%	2.44	3.71
1%	2.82	4.21

The variables have a long-term relationship, according to the bound test results, making it possible to estimate long-term coefficients.

5.3 Long run coefficients

For the long term, table 9 reveals that the p-value of all variables except the GDP are less than 0.05, so th-

ese variables have a long-term effect on the SMD. Thus, the long run effect is calculated as follows (equation 2):

EC = SMD - (-1.63*GDP + 2.03*SML + 0.84*CPS + 7.48*FDI -2.73*MS (2)

EC: the error correction term and it is the residual from long run equation

The result reveals that SML impacts positively SMD at a 1 percent significance level. It means 1 percent increase in SML leads 203 percent increase in SMD. For that variable CPS, it effects positively SMD at a 1 percent significance level. When CPS increase by 1 percent that leads SMD increase by 84 percent. At a 5 percent significance level, MS impacts negatively SMD, it reveals 1 percent increase in MS leads 273 percent decrease in SMD. For the GDP per capita and FDI have no impact on SMD in the long term.

Table 9: Long-term coefficients of ARDL model

Variables	Coefficients	Standrad Error	t-statistic	P-value
GDP	-1.63	2.27	-0.72	0.48
SML	2.03	0.64	3.17	0.01
CPS	0.84	0.17	4.91	0.00
FDI	7.48	4.96	1.51	0.15
MS	-2.73	0.93	-2.94	0.01

5.4 Short run coefficients

Table 10 revels that only the coefficient of CPS and FDI, with first difference, show the short-run elasticity. If 1 percent increase in CPS leads to increase by 178 percent in SMD at 1 percent level of significance. All other independent variables have no impact in the short-run. Also, if 1 percent increase in FDI leads to increase by 146 percent in SMD at 5 percent level of significance. All other independent variables have no impact in the short-run.

The CointEq(-1) is negative and significant at 1% level (table 12), so this proves the existence of long term relationship between stock market development and its determinant variables. The error correction coefficient is -0.55 that means 55% of the disequilibrium caused by the previous year's innovations were corrected in the current year. That means, also, the speed of adjustment of any equilibrium towards long run equilibrium state, in this case, the speed of adjustment is equal to 55% each year.

Table 10: Short-term ARDL model analysis

Variables	Coefficients	Standrad Error	t-statistic	P-value
D(GDP)	0.19	0.31	0.63	0.54
D(CPS)	1.78	0.33	5.33	0.00
D(FDI)	1.46	0.60	2.43	0.03
CointEq(-1)*	-0.55	0.09	-6.09	0.00
R^2	0.717			

* p-value is not compatible with the distribution of t-Bounds.

6. DISCUSSION

The objective of this study was to determine the macroeconomic indicators that increase Casablanca's stock market development. The macroeconomic variables included are: economic growth (GDP), stock market liquidity (SML), banking credit to private sector (CSP), foreign direct investment (FDI) and macroeconomic stability (MS).

A negative error correction coefficient, is statistically significant at 1% level, means the existence of co-integration relationship between series. Also, the current year's innovations remedied 55% of the disequilibrium brought on by the innovations from the previous years.

For the coefficients significance, the findings state that GDP has no impact, both in the short and long term, on SMD, this result is due to the Moroccan GDP's persistent sensitivity to agricultural performance and, consequently, climate change. This finding is not consistent with previous studies that predicted a positive impact, Yartey (2010), using a GMM panel data, found that income level is one of the indicators that determinant SMD for 42 emerging economies (1990-2004). Also, Ho and Odhiambo (2020), using an ARDL approach, found a positive impact of the income level on SMD in Hong Kong (1992Q4-2016Q3). However, stock market liquidity, financial sector development, foreign direct investment and macroeconomic stability are the main macroeconomic determinants of Moroccan SMD.

The stock market liquidity impacts positively the Moroccan SMD only in the long run, but the financial sector development impacts it positively both in the short and long run. These results are consistent with previous studies. In a sample of Asian and Latin American economies, Garcia and Liu (1999) confirmed that stock market liquidity and financial sector development effect positively SMD. Yartey (2010) showed the importance of stock market liquidity and financial sector development for the SMD in fourteen MENA economies, over the period 1990-2007.

Manasseh et al. (2017), through a study focused on stock market exchange in Nigeria by estimating an ARDL model for the period 1985-2013, the authors revealed that SMD is determined by stock market liquidity. For the case of South Africa, banking sector development impacts positively SMD (Ho, 2018). Also, Ho and Odhiambo (2020) found that financial sector development increases SMD in Hong Kong from 1992Q4 to 2016Q3.

In this respect, market liquidity provides investors access to their savings and enhances their trust in stock market investments. Similar to how the banking system supports the stock market in terms of financing development and investments, the financial sector stimulates the stock market development.

Foreign direct investment is another factor that promotes Moroccan SMD, although only in the short term. Evrim-Mandaci et al. (2013) found the same result, for 30 economies for the period 1990-2007. According to the study conducted by Azam et al. (2014), the FDI determines Romanian stock market exchange development. Due to increased corporate funding and investor flexibility, the FDI can support SMD. Additionally, the businesses involved in the FDI are also quick to capitalize on local stock markets, because they typically come from developed countries where financing through the stock market is a tradition and a requirement for any company wishing to improve its reputation with investors.

Furthermore, the macroeconomic stability, which measured by the Barro's Misery Index (the sum of unemployment rate and inflation rate) has proven to impact negatively the Moroccan's SMD, both in the short and long term. This result is similar to those obtained in the studies conducted by Quartey and Gaddah (2007), for the case of Ghana from 1991 to 2004; Ho (2018), for the case of South Africa from 1975 to 2015 and by Ho and Odhiambo (2020) for the case of Hong Kong from 1992Q4 to 2016Q3).

Generally, high levels of macroeconomic stability are motivating for stock market investors. It has a

beneficial impact on the companies' financial performance, which in turn raises the price of their shares on the stock market. As a result, as they generate profits, investors will increase their stock market investments, which promotes the SMD. In this sense, the macroeconomic stability is characterized by low inflation rate and low unemployment rate, which are beneficial for SMD, the macroeconomic stability makes stock market more attractive than the macroeconomic instability (higher inflation rate and unemployment rate) (Ho and Odhiambo 2019; Shi et al. 2021).

CONCLUSION

Through a developed stock market, savings can be converted into investments producing the liquidity necessary to drive economic development. In order to promote its stock market, Morocco has recently engaged a number of reforms affecting its regulation, but the results remain below expectations.

In this regard, this study has provided us with a comprehensive knowledge of the macroeconomic variables that promote Moroccan SMD, in the short and long terms, in the absence of studies regarding the macroeconomic factors that improve the development of Moroccan stock market.

Based on the results, it can be stated that economic growth has no effect on SMD, either in the short or long term. Given that the Moroccan economy is growing irregularly and is mainly based on agriculture, which is dependent on weather hazards, this finding is quite normal. The Moroccan economy has to endure relatively fast development rates in order to promote SMD.

In contrast, stock market liquidity, financial sector development, foreign direct investment and macroeconomic stability are the main macroeconomic determinants of Moroccan SMD. Therefore, to develop the stock market, Morocco has to develop its banking system since it helps the stock market and banking sector together to maintain a healthy level of market liquidity. In addition, through lower inflation rate and lower unemployment rate, the Moroccan government is aiming to foster an environment for business that will draw in more foreign investment and guarantee macroeconomic stability.

The Moroccan stock market is crucial to the country's economy. Nowadays, it confronts a number of challenges, including the need to enhance the conditions for listing companies on stock exchanges, draw in new investors (both domestic and international), and diversify the actors involved in the management of savings. In light of the fact that small and medium-sized businesses account for about 95% of the Moroccan economy, fundamental reforms for legislation and new guidelines for their implementation are therefore necessary. ....

Applying more effective economic policies that would help the Moroccan stock market to recover is becoming urgent.

Throughout of this research, we aimed to identify the macroeconomic factors that contribute to Moroccan stock market development. Along with these macroeconomic factors, institutional aspects also need to be examined. In this regard, the expectations of stock market investors should be satisfied by regulation, corporate governance, financial liberalization and investor protection (Newton 2017; Shi et al. 2021).

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