

FINANCIAL INNOVATIONS AND FINANCING OF THE MOROCCAN ECONOMY

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Abstract:

While the issue of financial innovation has been addressed through several debates as well as theoretical studies and approaches, its role in the financing of the economies in general and of the Moroccan domestic economy in particular, has received less attention. Thereby, our research work aspires both to grasping linkages between financial innovation and the financing of economies, and to understanding the extent to which such innovation contributes to the economic financing. To do so, we have resorted to a vector-autoregressive (VAR) modeling in the sense of Granger (1987). The results of our empirical investigation have shown that financial innovation contributes positively to the financing of the economy. However, this contribution remains limited in terms of magnitude and disappointed aspirations.

Keyword: Financial innovation, financing of the economy, financial repression, financial liberalization, hybrid instrument, vector autoregressive (VAR) model.

1. Context and problem:

The question of the financing of the economy has always been at the center of the concerns of developed and developing countries, including our country Morocco, this is certainly due to the importance of financial resources in stimulating investment and consequently the creation of employment and added value, which promotes social well-being.

During the last four decades, the sources of financing have undergone a profound change following the changes experienced by the economic and financial environment during the 70s and 80s and also thanks to the increased use of information and telecommunications, hence the emergence of financial innovations.

The content of this notion ⁽¹⁾ is far from being well understood, we are witnessing a diversity of definitions. Some see it as new financial products, new financial services, new financial markets, new financing policies, new forms of organization, new methods of commercial management of financial products, etc. (Silber (197); Geoffron (1992); Tufano (2002); Oslo manual (2005))⁽²⁾, while for those who opt for the narrow sense of the term, they see it as the introduction of new products on the market or the introduction of an existing product but in a new way (Van Horne (1981); Karaliev (1984); Gowland (1991); Levratto (1993))⁽³⁾.

As for the economic literature on the subject of financial innovation, it covers a very vast and not very homogeneous field given the sustained pace at which it is developing. Theoretical

works on this notion generally adopt an approach that is specific to their authors. We are witnessing a lack of a unified, more comprehensive and more coherent theory (Khraisha et al. (2018)).

The subject of financial innovation only gained momentum with the financial crisis triggered in 2008, following the phenomenal development of financial products resulting from financial innovation (Boyer 2008; Gennaioli (2012); Plohon (2013)). This crisis had perverse effects that went beyond the financial sector to reach the real sector while stimulating economic and social misery and whose effects continue to be felt until the present time, which has therefore allowed the issue of financial innovation to take center stage, something that prompted us, too, to question financial innovation in Morocco.

After digging to the maximum, given the scarcity and even the absence of studies on the subject, we were able to observe that after the debt crisis of the 1980s, the Moroccan monetary and financial system underwent a profound change following the reforms carried out by the Moroccan monetary authorities while aiming for the transition from a debt economy to a financial market economy and the establishment of non-inflationary financing based on the country's internal resources and this through the financial market.

To do so, the supervisory authorities, following the example of the developed countries, set up a panoply of new financial instruments, from the year 1996, among which we can cite those dedicated to the financing of companies, and which constitute the subject of this research work, namely Bonds Redeemable in Shares, Bonds Convertible into Shares, Non-Voting Priority Dividend Shares, Double Voting Shares, Investment Certificates and Certificates of Voting.

By setting up these financial instruments, the Moroccan authorities aimed to improve the financing of businesses, in particular, and of the economy, in general. Hence the problem of our research work:

"To what extent does financial innovation contribute to the financing of the Moroccan economy?"

2. Theoretical frame:

To answer our problem and, after having dug as much as possible, given the absence of a theoretical approach allowing the joint study of financial innovation and the financing of the economy, we mobilized a theoretical framework combining the theoretical approaches in terms of financial innovation and that of economic growth. As a result, we have referred to the theoretical contributions relating to the functions that financial innovation allows and those dealing with the relationship between finance and economic growth. The combination of these contributions has enabled us to observe that financial innovation impacts the financing of the economy directly and indirectly through two transmission channels, in particular savings and stock market liquidity.

2.1. Direct Effect:

According to theoretical approaches in terms of financial innovation, the latter allows the diversification of sources of financing as well as the minimization of financing costs. These functions promote the growth of funds and therefore the financing of the investment.

Regarding the diversification of funding sources. It can be done through the development of new financial products following the modification of one or more intrinsic characteristics of the products offered by market participants (Levratto, 1993).

According to Campbell (1988) and Siegel (1990), these products can be designed to deal with a specific financial function, which allows, on the one hand, the increase of sources of financing and, on the other, to facilitate companies to select the financing products best suited to their objectives and to abandon those that do not perform the desired functions.

In this order of idea, Llewellyn (1992, 2009) affirms that the financial innovation allows the widening of the sources of financing and that following the increase in the offer of financial products which supports the speed of access to equity for firms.

As a result, the provision to these firms of a wide range of financial instruments, according to their needs, promotes as many investment and growth operations. In this sense, Frame and White (2004) emphasize that financial innovation plays a key role in the financing of investment and therefore in the production process.

Alongside the diversification of sources of financing that financial innovation allows, the latter also allows the minimization of financing costs. According to Merton (1992), Allen and Gale (1994) as well as Lerner (2006), financial innovations influence companies by allowing them to raise significant capital at more advantageous costs compared to other sources of financing.

Also Goodhart (1989), argues that the process of financial innovation involves a series of steps imposed by competition and technological changes, which makes it possible to reduce intermediation costs. In this case, the borrower by resorting to financial innovations only bears proportionally lower financial costs compared to his recourse to traditional forms.

Consequently, the importance of financial innovation is manifested, on the one hand, in the possibilities of raising large sums and at a lower cost compared to traditional intermediated financing which imposes high intermediation rates and significant guarantees.

2.2. Indirect Effect:

Alongside the direct effect of financial innovation, it also has an indirect effect on the financing of the economy through the functions it offers. These are the diversification of financial instruments, the sharing of risks and the resolution of financial market imperfections, in particular transaction costs and information asymmetries.

Regarding the diversification of financial instruments, it gives the issuer the freedom to determine the characteristics of its financing instruments and the saver new investment opportunities, on the other hand, and consequently on the market. stock market, more dynamism as well as a high degree of liquidity. The new instruments resulting from financial

innovation constitute new investment opportunities insofar as they present new characteristics which make them more attractive for the savers while allowing them to arbitrate between several possibilities of profits (Abraham (1988); Chen (1995)).

According to King and Levine (1993), these new instruments tend to increase the level of savings as well as that of investment. According to these authors, financial innovations lead to higher levels of savings and capital accumulation and therefore a higher level of economic growth (Levine, 1997).

As for the function of risk sharing, Van Horne (1985) states that financial innovation plays a key role in risk transfer and in increasing liquidity. Similarly, Llewellyn (2009) considers that financial innovation has the potential to transfer risks optimally to those who are best able to absorb it, which improves the functioning of the financial market and makes it more liquid and consequently favorably affects capital accumulation and economic growth (Levine and Zervos, (1998)).

This risk sharing can be done through the variety of financial products authorized by financial innovation, following the combination or separation of the characteristics of already existing instruments. This combination or separation makes it possible to obtain new instruments with different characteristics in order to respond to new preferences in terms of risk, something which will allow the various actors to protect themselves from a risk by transferring it to a third party ready to better assume it as is the case with CDS (Credit Default Swaps) and CDOs (Collateralized Debt Obligations). This variety of financial products promotes the expansion of funds and therefore a better distribution of risks while offering risky products at the request of investors ready to bear it and consequently the transfer of funds from lenders to borrowers in a more efficient. This risk sharing, according to financial innovation proponents such as Bervas (2008), improves the liquidity of the stock market. According to this author, the risks can be split and cut into several tranches and negotiated independently of each other, which therefore promotes the improvement of the liquidity of the financial market.

Regarding the resolution of financial market imperfections, Tufano (2003) argues that financial innovation responds to market imperfections including transaction costs and information asymmetries. In this order of idea, Ross (1989) stipulates that this can be done following the design of new products facilitating, on the one hand, access to information, which reduces agency costs and consequently transaction costs. According to Merton (1992, 1995) and Finnerty (2002), these costs can be reduced by the fact that financial innovation allows providers of capital to enter into a direct relationship with the applicants without intermediation.

On the other hand, Llewellyn (2009) affirms that the design of new financial products will also promote the improvement of the transparency of exchanges while allowing access to all the information relating to the advantages and risks presented by these different possibilities. investment and borrowing.

According to this, it is clear that financial innovation is a means to overcome the imperfections of the financial market which promotes the transformation of savings into investment.

In short, it should be noted that all of these functions enabled by financial innovation promote, according to our literature review, the improvement of savings and stock market liquidity, which in turn act on financing of the economy, something that allows us to deduce that financial innovation has an indirect impact on the financing of the economy through two transmission channels, in particular savings and stock market liquidity.

Grossomodo, according to our literature review, it should be noted that financial innovation positively affects the financing of the economy through the increase in financing funds following the diversification of financial instruments as well as the minimization of cost of financing on the one hand, and, on the other hand, by means of transmission channels, in particular the channel of savings and the channel of stock market liquidity.

On the basis of this literature review, we will formulate our research hypotheses that we will then try to test them in the Moroccan context, but before presenting them, it is important to highlight the methodological approach mobilized in the framework of this research.

3. Methodology and hypotheses of the research:

The methodological approach mobilized within the framework of this research work is the hypothetico-deductive approach. We start from a theoretical investigation to formulate hypotheses that we will then try to verify in practice and then generalize the results.

The hypotheses of this work revolve around 3 main hypotheses with 4 sub-hypotheses which are as follows:

H.1: Financial innovation has a direct positive effect on the financing of the economy

H.2: Financial innovation has an indirect positive effect on the financing of the economy through the savings channel.

H2.1: Financial innovation has a positive effect on savings

H2.2: Savings have a positive effect on the financing of the economy.

H3: Financial innovation has an indirect positive effect on the financing of the economy through the channel of stock market liquidity.

H3.1: Financial innovation has a positive impact on stock market liquidity

H3.2: Stock market liquidity has a positive effect on the financing of the economy.

These are all the hypotheses of this research work. To confirm or refute these hypotheses, we conducted an empirical study, the methodology of which we will present in what follows.

4. Empirical Approach:

4.1. The variables used and the data sources:

This indicator is measured by the stock of private physical capital. However, the statistics concerning this variable do not exist in Morocco, which encourages us to calculate it, using the most common method, namely the permanent inventory method ⁽⁴⁾.

So, to calculate it, you have to follow the following procedure:

Private investment is the difference between total investment and public investment.

$$I_{priv} = I_T - I_{pub}$$

Où :

I_T : la formation brute du capital fixe (FBCF) ;

I_{pub} : les dépenses d'investissement publiques.

To calculate the stock of private capital, we used the perpetual inventory method() according to which:

$$K_t = I_t + (1 - \delta)K_{t-1}$$

Avec

I_t : gross fixed capital formation

δ : the depreciation rate ($\delta = 3\%$)(⁵).

The initial physical capital stock K_0 is calculated as follows:

$$K_0 = I_0 / (\rho + \delta)$$

Où:

I_0 : the initial investment

ρ : annual growth rate of investment I_t

δ : depreciation rate of physical capital.

***Financial Innovation:**

To measure it we are witnessing a lack of a universal measure that can be applied to any study. To fill this void, several measures have been adopted by the economic literature, among which we can cite expenditure on research and development in the financial sector, returns from the introduction of new financial products and/or services, patents invention and specific innovations, namely new forms of organization (internet banking) or new products (swaps or loans), as is the case of our present research work which adopts, as a measure of innovation financial, the outstanding amount of new financial instruments introduced for the financing of Moroccan companies.

Based on the availability of data, our choice was limited to the outstanding amount of the two instruments, namely the Bonds Convertible into Shares and the Bonds Redeemable into Shares.

***Savings:**

This variable is measured by financial savings, which includes monetary savings and investments in the financial market.

The method of measuring this indicator that we have adopted in this research work is that used by Bank Al Maghrib. This involves bringing together all the components of financial savings such as liquid assets, demand investments, short-term and term investments, UCITS investments, institutional savings and securities issued by companies.

***Market liquidity:**

Stock market liquidity is measured by the stock market liquidity ratio. This ratio is calculated by dividing the volume traded on the central equity market by the market capitalization. This rate is formulated as follows:

$$R_{liq} = MCA / Cap$$

Or :

R_{liq}: market liquidity ratio

MCA: the volume traded on the central equity market

Cap: market capitalization.

The following table summarizes the variables used, their measurements and the data sources.

Table 1: Model variables and data sources used

Variables	Notation	Mesure	Sources of data
Private investment	InvPr	Stock of private physical capital	annual reports of Bank Al Maghrib (BAM)
Financial savings	EpFin	Outstanding financial savings	
Financial innovation	InFin	Outstanding New financial instruments	annual reports of the Casablanca Stock Exchange (BC)
Market liquidity	Liq	Market Liquidity Ratio	

Source: author

The data used are data from the annual reports of Bank Al Maghrib (BAM) and data from the annual reports of the Casablanca Stock Exchange (BC) expressed in millions of Dh. And as for the tool used to assess the degree of contribution of financial innovation to the financing of the Moroccan economy is vector autoregressive modeling (VAR) in the sense of Granger, the empirical approach of which will be presented in the following point.

4.2. Specification of the mobilized model:

To carry out our problem and verify our hypotheses, we mobilized autoregressive vector modeling. The choice of such a model was made following the characteristics of the series selected, as well as the relationship of interdependence existing between the variables. This type of modeling makes it possible to analyze the effects of one variable on the other through simulations of random shocks. It is a question of studying the joint dynamics of several series and of highlighting the dynamic interdependencies between all the variables. Of the model through the analysis of random shocks (impulse analysis) and the analysis of the decomposition of their variances (Bourbonnais, 2009) ⁽⁶⁾.

Statistically, a VAR model involves variables, processed symmetrically without exclusion or erogeneity conditions and with the same length of delay for each.

In general, a VAR model with k variables and lag p, denoted VAR(p) looks like this:

$$y_t = \hat{A}_0 + \hat{A}_1 Y_{t-1} + \hat{A}_2 Y_{t-1} + \dots + \hat{A}_p Y_{t-p} + e_t$$

e: being the dimension vector (k,t) of the residuals $e_{1t}, e_{2t}, e_{3t} \dots$. and we note: $\Sigma e = E(v_t v_t')$ the matrix of estimated variance covariance of the residuals of the model.

in matrix form:

$$y_t = \begin{Bmatrix} y_{1,t} \\ y_{2,t} \\ \cdot \\ \cdot \\ y_{n,t} \end{Bmatrix}; \quad A_p = \begin{Bmatrix} a_{1,p}^1 & a_{1,p}^2 & \dots & a_{1,p}^k \\ a_{2,p}^1 & a_{2,p}^2 & \dots & a_{2,p}^k \\ \cdot & \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot & \cdot \\ a_{k,p}^1 & a_{k,p}^2 & \dots & a_{k,p}^k \end{Bmatrix}; \quad y_t = \begin{Bmatrix} a_1^0 \\ a_1^0 \\ \cdot \\ \cdot \\ a_k^0 \end{Bmatrix}; \quad v_t = \begin{Bmatrix} v_{1t} \\ v_{2t} \\ \cdot \\ \cdot \\ v_{kt} \end{Bmatrix}$$

The originality of this model is that it does not contain purely exogenous variables:

- It is composed of as many equations as there are selected variables,
- Each variable is endogenous in its generic equation and is then determined by its past and that of the (n-1) other variables;
- The study of dynamics constitutes the essence of the analysis of VAR models.

Estimating a vector autoregressive (VAR) model requires following a number of fundamental steps. It is, at first, the study of the stochastic properties of the series of the sample, the determination of the optimal number of lags and the study of cointegration.

Secondly, it is necessary to estimate the standard VAR model and to check its stability and thirdly, it is a question of analyzing the impact that the variables of the model have on each other using two complementary analysis methods, namely variance decomposition and impulse analysis. It is this empirical approach that we followed in our empirical study to assess the degree of contribution of financial innovation to the financing of the Moroccan economy. But before estimating our model, it is a question, first of all, of highlighting the method of quarterly data adopted.

4.3. The Quarterly Method:

Our empirical study covers a period from 2000 to 2020, i.e. 18 observations, which is insufficient for the estimation of a model (VAR) which requires more than 50 observations, which prompted us to use an appropriate quarterly method. data to expand our sample.

In this sense, we have used an approximate method (⁷), according to which for each variable Z observed annually, we associate a quantity q such that:

$$q = \sqrt{4Z_t(0,50Z_{t-1} + 3Z_t + 0,50Z_{t+1})}$$

Avec Z_t : the value in the current year,

Z_{t-1} : the value for the previous year,

Z_{t+1} : the value in the subsequent year.

The estimates of the values of the variable for the first quarter (Z_1), the second (Z_2), the third (Z_3) and the fourth (Z_4) will be conducted as follows:

The value in the first quarter:

$$Z_1 = 4\left(\frac{Z_t}{q}\right)(Z_{t-1} + 0,625 Z_t - 0,625 Z_{t-1})$$

The value in the second trimester:

$$Z_2 = 4\left(\frac{Z_t}{q}\right)(Z_{t-1} + 0,875 Z_t - 0,875 Z_{t-1})$$

The value in the third quarter:

$$Z_3 = 4\left(\frac{Z_t}{q}\right)(Z_t + 0,125 Z_{t+1} - 0,125 Z_t)$$

The value in the fourth quarter:

$$Z_4 = 4\left(\frac{Z_t}{q}\right)(Z_t + 0,375 Z_{t+1} - 0,375 Z_t)$$

5. Results and Implications:

Theoretical predictions indicate that financial innovation, financial savings and liquidity ratio are likely to affect private investment.

Indeed, to highlight the degree of contribution of financial innovation to the financing of investment, we assume that the latter is affected by new financial instruments, by financial savings and by stock market liquidity, while pointing out that financial innovation can also affect financial savings and stock market liquidity. As a result, the investment function can be formally written:

$$Y_t = \begin{pmatrix} \text{inv}_t \\ \text{IF}_t \\ \text{Epf}_{\text{fin}_t} \\ \text{liq}_t \end{pmatrix}$$

Where: (inv), (IF), (Epf_{fin}), (liq) are respectively, private investment, financial innovation, financial savings and stock market liquidity ratio.

Before proceeding with the estimation of the adopted econometric model, the first step is to conduct preliminary econometric tests of unit root and cointegration.

5.1. Preliminary Tests Results:

5.1.1. Stationarity test:

The stationarity test used in this work is the ADF test and to ensure the results obtained, we referred to the PP test.

The following table gathers the results of these two stationarity tests:

Table 2: Result of the ADF and PP Test of the series in level and in first difference at the 5% threshold

Variables	Test Augmented Dickey-Fullerts				Degré d'intégration	Test Phillips-Perron				
	En niveau		En différence 1 ^{ère}			En niveau		En différence 1 ^{ère}		
	Valeur du test	Valeur Critique	Valeur du test	Valeur Critique		Valeur du test	Valeur Critique	Valeur du test	Valeur Critique	
Investissement privé (Invp)	-2.222*	-3.490	-8.194*	-3.492	I(1)	-2.213*	-3.490	-8.194*	-3.492	I(1)
Innovation financière (IF)	-1.619* -0.480** 1.445***	-3.486 -2.910 -1.946	-2.504* -3.879**	-3.487 -2.910	I(1)	-1.565* -0.654** 1.945***	-3.482 -2.908 -1.946	-4.273*	-3.482	I(1)
Epargne financière (EpFin)	-0.863* -1.345** 1.818***	-3.489 -2.912 -1.946	-4.072*	-3.490	I(1)	-1.744* -1.806**	-3.485 -2.910	-3.815*	-3.486	I(1)
Liquidité boursière (Liq)	-1.053* -1.021** -0.805***	-3.502 -2.918 -1.947	-1.143* 4.062**	-3.502 -2.921	I(1)	-1.088* -1.217** -0.813***	-3.496 -2.917 -1.947	-7.980*	-3.498	I(1)

Source: Table based on stationarity test from Eviews

Notes

The critical values used are those of McKinnon [1996].

* Critical values with constant and trend

** Critical values with constant and without trend

*** Critical values without constant and without trend According to these results, we can notice that the two tests agree to confirm that the variables of our model are all stationary in first difference at the threshold of 5% which means that all the variables are integrated of order 1. This order of integration makes it possible to highlight the presence of a long-term relationship, which justifies the use of the cointegration test. However, before conducting this test, it is advisable to determine the adequate number of lags of the VAR representation.

5.1.2. Determining the optimal number of lags:

The choice of an optimal number of lags can be made using statistical selection criteria. These are the information criteria of Akaike (AIC), Schwartz (BIC), Hannan Quinn (HQ), etc. The order of the VAR model is determined by minimizing these statistical criteria.

Table 3: Result of the choice of the adequate number of delays according to the different criteria

	P = 0	P = 1	P = 2	P = 3	P = 4	P = 5	P = 6
Akaike (AIC)	6.323.995	-1.061.738	-1.389.543	-1.412.471	-1.413.660	-1.567.198	-16.50568*
Schwarz (SC)	6.479.929	-9.837.712	-1.249.203	-1.209.758	-1.148.573	-1.239.737	-12.60734*
Hannan-Quinn (HQ)	6.382.923	-1.032.274	-1.336.509	-1.335.866	-1.313.483	-1.443.450	-15.03249*

* Number of de lags selected by the criterion

AIC: Akaike information criterion

SC : Schwarz information criterion

HQ : Hannan-Quinn information criterion

Source: Table based on estimates from the number of de lags extracting from Eviews

According to the results grouped in the table above, the optimal number of delags provided by all of these statistical criteria is equal to 6 (P = 6).

After choosing this number of lags, we move on to the cointegration test. To do this, we referred to the Johanson test which is used when the number of variables exceeds 2.

5.1.3. The study of the cointegration of the variables of the model:

The decision of the existence of a cointegration relation is based on the comparison between the statistics of the trace as well as that of the maximum eigenvalue and their critical value at the threshold of 5%. The results from the cointegration tests are shown in the table below.

Table 4: Result of the cointegration test in the sense of Johansen between the variables of the model

Test de la trace	Critical value (5%)	Prob	TVPM	Critical value (5%)	Prob
99.57706	47.85613	0.0000	45.89280	27.58434	0.0001
53.68425	29.79707	0.0000	29.11504	21.13162	0.0031
24.56921	15.49471	0.0017	20.27035	14.26460	0.0050
4.298867	3.841466	0.0381	4.298867	3.841466	0.0381

Source: Table based on cointegration test extracting from Eviews

The present table shows that at the threshold of 5%, the test of the trace and the maximum eigenvalue coincide to validate the existence of four cointegrating relations.

There is cointegration, because the null hypothesis of absence of cointegration at the threshold of 5% was rejected whether for the Trace test or that of the maximum eigenvalue (99.57>47.85 (Trace) ;45.89>27.58 (VPM)). While the null hypothesis that there are four cointegrating

relationships was accepted for both tests at the 5% threshold ($4.29 > 3.84$ (Trace); $4.29 > 3.85$ (VPM)).

By virtue of the data reported in the table above, it turned out that the four-time series are cointegrated and the number of cointegrating relations is equal to 4. Therefore, following the theory of cointegration in the sense of Johansen, it would be preferable to model the interactive behavior of the four variables in the form of a VECM. Nevertheless, in line with Granger's contributions in terms of "inter-variable" causality, when $r = k$, we proceed in the following developments to estimate a VAR in first differences, especially since the four variables are all integrated of order (I)⁽⁸⁾.

After studying the cointegration of the selected series, what follows is to test the stability of the estimated model.

5.1.4. Checking the stability of the model:

As already noted, after estimating our model, it is a question of subsequently checking whether it is stable or not. This stability of the VAR is ensured only when the eigenvalues are inside the unit disk. In addition, it is possible for us to check the stability of the VAR thanks to the "Eviews" software, which allows us to graphically visualize the inverse of the roots associated with the autoregressive (AR) part of each of the variables. We get the following graph:

Figure 1: Stability test of the estimated model

Root	Modulus
0.980987	0.980987
0.691025 - 0.663465i	0.957967
0.691025 + 0.663465i	0.957967
-0.039182 + 0.956339i	0.957142
-0.039182 - 0.956339i	0.957142
-0.945889	0.945889
0.902544 - 0.145581i	0.914210
0.902544 + 0.145581i	0.914210
0.796416 - 0.411883i	0.896619
0.796416 + 0.411883i	0.896619
0.077066 + 0.886082i	0.889427
0.077066 - 0.886082i	0.889427
-0.657345 + 0.587235i	0.881446
-0.657345 - 0.587235i	0.881446
0.799301 + 0.318313i	0.860352
0.799301 - 0.318313i	0.860352
0.436199 + 0.691111i	0.817254
0.436199 - 0.691111i	0.817254
-0.598356 - 0.396245i	0.717663
-0.598356 + 0.396245i	0.717663
-0.694290	0.694290
-0.540755	0.540755
0.096190 + 0.463790i	0.473659
0.096190 - 0.463790i	0.473659
No root lies outside the unit circle.	
VAR satisfies the stability condition.	

Source: Eviews

According to this result of the stability test, we can notice that all the eigenvalues are inside the unit disk, this says that the model is very stable, something that will allow us to proceed to the dynamic analysis that this type allows modeling.

5.2. Presentation of the Research Results:

In this point, we will present the main results of the econometric analysis that we conducted using the (VAR) model, while aiming to assess the degree of contribution of new financial instruments resulting from financial innovation in the financing of the economy, on the one hand, and, on the other, confirming or invalidating the hypotheses proposed beforehand.

The estimation of our model (VAR), allowed us to analyze the effects of the dynamics of financial innovation, and this through two analytical tools, in particular the analysis of the impulse response functions and the decomposition of the variance of the forecast error, the results of which are grouped in the following table:

Table 5: Summary of the results obtained

Effects		Sign	Observation	Contribution
Direct	IF/invp	Positif	Relatively persistent effect	2,5%*(⁹)
Indirect bysavings	IF/EpFin	Transitory positive effect	Instability of the nature of the effect	3,2%*
	EpFin/invp	Positif	Persistent cumulative effect	4,6%*
Indirect bymarketliquidity	IF/Liq	Transitory positive effect	Instability of the nature of the effect	8,1%*
	Liq/invp	Positif	Persistent cumulative effect	16,5%*

Source: Results of the impulse analysis and the decomposition of the variance of the error (Eviews)

According to the results gathered in the table above, we can notice that:

1. The direct effect of financial innovation on investment is positive but relatively persistent according to the impulse analysis and the degree of contribution of financial innovation shocks to fluctuations in investment, does not exceed 2,5% in mean according to the results of the error variance decomposition..
2. As for the effect of financial innovation on savings, it is positive but transitory according to the impulse analysis, we are witnessing an instability of the nature of the effect, sometimes positive sometimes negative with an average contribution of 3,2% depending on the results of the error variance decomposition.
3. As for the effect of savings on investment, it is positive and persistent according to the graph of the impulse analysis but the contribution of its shocks to the fluctuations of investment hardly exceeds 4,6% on average based on the results of the error variance decomposition.

4. Concerning the effect of financial innovation on liquidity, it is also positive but transitory according to the impulse analysis, as is the case for savings, and with regard to the contribution of its shocks to fluctuations in the liquidity, it is 8,1% on average according to the decomposition of the variance of the error..
5. As for the effect of liquidity on the investment, it is positive and persistent according to the graph of the impulse analysis and the contribution of its shocks to the fluctuations of the investment it exceeds 16,5% according to the results of the error variance decomposition.

5.3. Analysis of the Results:

The results obtained from our empirical investigation allowed us to conclude that the initial hypotheses are accepted:

As for hypothesis 1 (H1), according to which financial innovation has a direct positive effect on the financing of the economy is confirmed.

The same for hypothesis 2 (H2), according to which financial innovation has a direct positive effect on the financing of the economy via the channel of financial savings is confirmed.

Hypothesis 3 (H3), according to which financial innovation has an indirect positive effect on the financing of the economy through stock market liquidity is also accepted.

Something that lets us conclude that financial innovation contributes positively to the financing of the Moroccan economy. Nevertheless, this contribution remains limited which prompted us to seek the causes behind this contribution which remains below aspirations.

After digging as much as possible, we were able to observe the existence of several factors which act successively and/or simultaneously on the development of the financial innovations introduced and force them to achieve the expected results in terms of improving the financing of the economy. . These are economic, regulatory and subjective factors⁽¹⁰⁾.

With regard to economic factors, they revolve around the omnipresence of banks in the stock market, the diversification of financing possibilities offered, the increase in medium and long-term credit, the restructuring and concentration of the banking system and a narrow and opaque stock market.

As for the regulatory factors, they are related to the various laws that regulate the stock market such as laws favoring demand over supply, laws favoring the concentration of the stock market in the hands of banks and institutions, strict rules of transparency of listed companies and the binding requirements for listing on the stock exchange.

As for the subjective factors, they revolve around the persistence of the reluctant mentality of the owners to the opening of capital as well as the absence of a stock market culture of the entrepreneurs.

5.4. Economic Policy Implications:

The combination of all of these factors, whether economic, regulatory or subjective, can constitute blocking forces that prevent new financial instruments from achieving the expected results, which has prompted us to propose some economic policy measures that seem to us important.

The first step is to promote these new financial instruments through awareness-raising actions to encourage companies to use these new financial instruments as an alternative to bank financing.

Secondly, comes the need to revise certain laws, especially those favoring the concentration of the stock market in the hands of banks in order to reduce the domination of banks on the market.

Finally, Moroccan decision-makers should put in place measures aimed at improving the conditions of access to the stock market to encourage companies to use the stock market to meet their financing needs.

All of these measures could contribute to the development of new financial instruments as they can contribute to the improvement of direct financing, especially as the Moroccan monetary authorities take up the challenge of developing a system oriented towards direct finance.

6. Conclusion and future avenues of research:

The main objective of this research work aims to analyze the impact of new financial instruments resulting from financial innovation on the level of financing of the Moroccan economy. To achieve this objective we began, initially, with an overview of the literature, while aiming to study the relationship likely to exist between financial innovation and the financing of the economy and consequently the formulation of research hypotheses. In a second, we conducted an empirical study covering a period from 2000 to 2020 while mobilizing vector autoregressive modeling (VAR).

The results obtained from this empirical investigation show a limited contribution with 2% on average to investment fluctuations, 4% on average for financial savings and 9% on average for stock market liquidity. These results make it possible to validate our previously defined hypotheses, according to which financial innovation has both a direct positive and indirect positive effect on the financing of the economy. Overall, it appears that from our econometric results, the existence of a positive effect, but below expectations in terms of magnitude. This low contribution cannot be attributed to a single cause, but to a series of factors that have played their role successively and/or simultaneously in the development and operation of our financial instruments. These factors are economic, regulatory and subjective.

As for the contributions of this study, we are able to emphasize that the latter has contributed to the study of financial innovation in Morocco while highlighting the new financial instruments put in place since 1996 and which are still under-exploited and even unknown. This work has also contributed to enriching the empirical studies on the subject, which until now remain relatively rare, and lastly, it will also contribute to raising awareness among both

company managers and decision-makers of the importance of these new financial instruments. On the one hand, to encourage managers to use them to meet their financing needs and decision-makers to give more importance to these new financial instruments which promote the improvement of direct financing, especially since the Moroccan monetary authorities the challenge of developing a system geared towards direct finance.

As for the limits of this study, they are primarily related to the lack of a solid theoretical foundation linking financial innovation to the financing of the economy. Secondly, to the non-availability of statistical data on a quarterly basis. And finally, to a striking shortage of empirical studies on the subject (Beck et al. (2016) especially Moroccan studies in order to compare the results obtained.

Finally, it should be noted that many research avenues are still to be explored in this area. It is always possible to deepen the reflection on the subject, by not limiting oneself only to the new instruments intended for the financing of companies, but to those intended for the financing of the Treasury and financial institutions.

Also, it is always possible to deepen the reflection on the subject, by taking into consideration, on the one hand, another measure of financial innovation and by integrating other transmission channels through which financial innovation impacts the financing of the economy, on the other. It would be promising to integrate them into our future research work.

In addition, it would be interesting to complete the analysis with a comparative study with other countries with the same level of development as Morocco to take advantage of their experience in financial innovation.

In short, this research work, linking financial innovation and the financing of the economy, represents a step for the deepening of work in relation to the financing of the economy, on the one hand, and on the other financial innovation, on the other, and can be considered as an opening towards a long process of research making it possible to bring more clarification on the subject.

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