Researches on finance and economic growth in Algeria (2011-2016): critical study

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Abstract:
This article offers a critical analysis of several studies that have examined the relationship between finance and economic growth in the case of Algeria. In order to be able to control our criticisms, we tried to determine the analysis criteria and the points of similarity between the selected studies. It appears through this study that the relationship between finance and economic growth is analyzed by an econometric method based on mathematical models which do not always reflect the reality of this relation and remain somewhat superficial, for several reasons mentioned in this study.
Keywords: Finance and Growth; Financial Development; Econometrics; Algerian Economy.

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Introduction:

Interest in the role that finance can play in growth dates back to the work of Schumpeter and Goldsmith, among others. In this paper, we present a synthesis and a critical analysis of studies on the relationship between finance and growth in the case of Algeria.

In Algeria, as in most of the developing countries which experienced crises of structural dysfunction, in the early 1990s, the problem of the relationship between finance and growth grew with the reforms undertaken, in particular with the promulgation of the law on money and credit (90/10 of April 1990), which has set itself "*as the objective of making financial intermediation the instrument of dynamization and modernization of the economy*" (TALAHITE, 2010, p 27)

The studies on the relationship between finance and growth relative to the case of Algeria, which we encountered during our research, are relatively recent; they try to establish a causal relationship or correlation, through econometric models. This study sees the critique of these studies as its objective.

Methods and Materials:

To be able to analyze the studies aimed at studying the relationship between finance and growth, in the particular case of Algeria, we tried to determine the analysis criteria which are: the objectives, the methodology followed and the results. We have organized this section in a table which the reader will find in the appendix.

1. **Summary of empirical studies on the case of Algeria:**

The countries subjected to a capitalist or semi-capitalist regime claim to have a hypothetico-deductive political economy, based on a theory of subjective value. They generally adopt an individualistic analysis and use mathematics in their analyzes.

The countries of socialist planning, on the other hand, adopt a historical, holistic analysis (DOMARCHI, 1958), based on an objective theory of value. The latter refuse or avoid as much as possible the use of mathematics in economic analysis.

But what about countries in transition, historically with a socialist tradition?

Countries in transition like Algeria which are no longer socialist, but not yet capitalist, are faced with a complex situation. On the one hand, socialist traditions rooted in all areas of social life, and on the other hand, globalization and the influence of liberalism push things in the opposite direction and impose on these countries an individualistic political economy. (KARA, 2017)

Some studies in the case of Algeria try to adopt an econometric model, without taking into account the context of Algeria. These studies try to "calculate" the degree of development of Algeria's financial system by taking into consideration financial liberalization, as the one and only explanatory variable of financial development, and from there to establish a relation with economic growth. (KARA R. , 2018 a)

However, the periods concerned by these studies begin with the 1970s, while it is obvious that at the time Algeria was socialist and therefore its financial system did not have a large role in the economy. Financial liberalization in Algeria began - at least on paper - with the promulgation of the 90/10 law of April 1990, however, producing a model that calculates financial development since 1970 seems incongruous.

Also, the use of these econometric models to "*hide under the same tinsel, with formulas and theorems intended to impress the reader, both scientifically brilliant ideas and pure and simple nonsense*" (MIROWSKI, 2012, p 118) and follow in the footsteps of former economists mathematicians - perhaps without realizing it - such as Walras, Jevons or Edgeworth who admitted having "sought to" copy "*physics, in order to hasten the access of economics to the status of mathematical science*".(MIROWSKI, 2012, p 123)

This was severely criticized by Paul Romer, the father of the theory of growth by technology (endogenous growth), in a recently published article entitled "*Mathiness in the theory of economic growth*"(Romer, 2015), he criticizes what he calls the "*mathiness*" which consists in using mathematics not as a tool allowing to clarify the thought, but on the contrary, as a magic hat allowing to pass off a masquerade for the science and add some credibility to their "magic trick". It is indeed quite simple to make a model say what you want: all you have to do is change a few assumptions, place a vague notion under variable or add restrictions here and there, and you get to the point quite easily conclusion you desire.

According to Romer, who talks about growth theory, not many people are really interested in the accuracy of mathematical proofs of a model. Romer gives as an example to argue this, an article by Lucas, Nobel Prize winner in economics, who is also his thesis supervisor, published in a prestigious academic journal (journal of Political Economy), but which according to Romer contains a basic mathematical error which has never been corrected.

Currently, the use of mathematics is "almost" imposed, because one cannot publish a paper without adding a mathematical demonstration, just to try to give a "scientific" credibility to his work, even if it is an old model which does not exist. It is nothing original and does not add anything new, a non-conforming copy where small modifications are introduced, just to say that we used an econometric model without being really convinced[*].

In a passage from Piketty worth mentioning, to illustrate what we just explained above, he says:

"*The discipline of economics has still not emerged from its infantile passion for mathematics and purely theoretical, and often very ideological, speculations, to the detriment of historical research and to bringing them closer to other social sciences. Too often, economists are above all preoccupied with small mathematical problems which interest only themselves, which allows them to give themselves at little cost appearances of scientificity and to avoid having to answer the questions much more complicated posed by the world around them*. " PIKETTY, 2013, p 63).

We have also noted that there are studies which take into account the same period and the same method but lead to contrasting results, and this for three main reasons: (i) the interpretation of the results is different, which amounts to saying, that in this type of study the interpretation comes first of all to the researcher and not to the method itself; (ii) the variables used are not the same, or else (iii) the data sources used are different.

[*] In a survey that we carried out at the level of the Faculty of Economics of our university, as part of the development of a book on research methodology, 80% of the doctoral students questioned believe in the need for the use of econometric models so that the thesis is qualified as scientific, and 70% say that the work is not sustainable without the introduction of an econometric model, this explains, in our opinion, among other things, the difficulty that many doctoral students have to finalize their work, knowing that 90% of those questioned have never had any training in econometrics..

The aim of these studies is to demonstrate mathematically that there is a correlation relation between abstract and purely theoretical variables without even knowing which fact to explain. But is it really the goal of economic studies by being a discipline of the social sciences and not a hard science?

The use of hard science techniques like physics and mathematics is seen by the mainstream as proof that economics is an "exact" science.

According to McCloskey (1995), even the most advanced statistical and econometric models try to justify the solidity of their equations which becomes their object of study and their finality. While the goal of an economic study is the analysis in relation to the real world, therefore, we cannot explain reality through an abstract model, much less generalize it. Indeed, in studies on the relationship between finance and growth, what one criticizes econometric models, is the fact that they are disconnected from reality, that is to say, they do not explain reality but try to explain the model itself, and it is the same criticisms that are generally made to the neoclassical school which uses an abstract model based on the assumption of an efficient market and the absence information asymmetry, which is far from being close to the reality of financial markets. This is in addition to his detachment from the social sciences; it makes no relation between political economy and other social sciences like sociology and politics, among others, and therefore its explanation of the relation between finance and growth remains far from reality, that is what Pfleiderer , called "*chameleon*". This term refers to economic models with questionable connections to the real world, which replace empirical precision with mathematical elegance (Pfleiderer, 2014). In these models mathematical perfection is more important than understanding and explanation in relation to reality.

Our position is in this direction; econometric studies on the relationship between finance and growth, carried out on the case of Algeria, do not reflect the reality of the Algerian context:

1. It does not reflect the social, political, historical and institutional reality of Algeria because one cannot explain financial development without understanding the interaction between all these factors. (KARA R. , 2018)

2. The definition adopted in these studies is the definition of “financial repression”; taking a single explanatory variable and asserting the existence or absence of the relationship between financial development and economic growth is not enough. All the more so since this variable could only be explanatory in liberal economies.

3. It is impossible to explain the relationship between financial development and economic growth without commenting on the state of development of the financial system. In econometric studies, this relationship cannot be established without the use of data on economic growth and financial development. These data are generally insufficient in the case of Algeria [*].

[*] Due to their insufficiency, data on the financial development of Algeria do not appear in the reports of international financial institutions. (See as an example: *World Bank. 2020. Global Financial Development Report 2019/2020 : Bank Regulation and Supervision a Decade after the Global Financial Crisis. Washington, DC: World Bank. © World Bank. https://openknowledge.worldbank.org/handle/10986/32595 License: CC BY 3.0 IGO.*. Et toutes les publications précédentes)

4. The most widely used variable in measuring the level of financial development of a given economy is the private sector credit / GDP ratio. In the case of Algeria, referring to statistics, this ratio has increased in recent years, but does that mean that the Algerian financial system is more developed? In reality, the increase in the ratio of credits intended for the private sector / GDP does not respond to an economic logic, but to other socio-political reasons

Thus, to establish the relationship between financial development and economic growth in the case of Algeria, we must first measure, or isolate economic growth excluding hydrocarbons, subsequently, we must ensure that this growth outside Hydrocarbons is really generated by the financial system.

If not, what is the point of establishing a correlation between financial development and economic growth in Algeria, especially since we know, a priori, that its economic growth is generated by oil rent and not by the financial system, and that we know full well that the latter is very weak!s.

2. Results and discussion : for a literary (verbal) language

The economy has evolved enormously in recent years through the use of formalization. Quantitative techniques have so pervaded him to the point of reducing economics to neoclassical analysis. The specificity of the latter is that it establishes the supremacy of mathematical language and quantitative methods by denying literary language and qualitative methods.

Indeed, the majority of publications in economics are filled with mathematical formulas, computational equations and econometrics. In 1992, the economist Blaug studied the economic literature and showed that during the 1980s more than 50% of publications consisted of mathematical models without empirical data (BLAUG, 1993, p XXI).. This leaves the author to say:

"*If Jevons and Walras were alive today, they would be amazed to find that mathematics has not only become the everyday language of economists but has practically transformed the whole of economics into a branch of applied mathematics*".(BLAUG, 1999, p 276)

These results were confirmed by several economists (CACHANOSKY, 1986), (ALLAIS, 1989). This is the reality of contemporary economic research, but as if economics were a science similar to physics and therefore mathematics had to be used.

For Hayek, social science data is necessarily subjective, since it concerns: "not the relations between things, but the relations between men and things and the relations between man and man. ", In this sense Malthus explained already in 1836 that:" (...) *political economy has much more to do with morality and politics, than with mathematical sciences.* " (MALTUS, 1846, p 1).

The use of mathematics is linked for a large part to the study of economic equilibria, and in particular general equilibrium. However, "*Balance would bring economic stagnation and death; imbalance is the driving force that keeps the economy alive and moving it forward*. "(MALTUS, 1846, p 1). The presentation of an economy in" balanced "form can only be done by transforming or denying what makes the subject of the economy as of all the social and human sciences: man. This is another consequence of the use of mathematical models.

Econometric studies on finance and growth are numerous. However, they do not make it possible to answer all the questions raised, because they seek to establish a correlation relation - and rarely the causal relation and its explanation - which is the ultimate goal of any mathematical economist. The relationship between finance and growth is distorted, torn apart, with the sole aim of making it suitable for being treated by computational methods or inserted into differential equations for the sole purpose: to hope to be published[*]. Or even more, to encumber his work with too many tables and very long econometric equations which make no sense economically speaking, "*using and abusing without restraint or scruples mathematical and statistical artifices, to claim to present themselves in an objective light and scientist*." AKTOUF, 2013, p 47).

In this sense, Malinvaud and despite his leaning towards formalized analysis, has always affirmed his skepticism in the face of developments in mathematical economics, and suggests in his latest methodological writings to return to literary analysis in a passage that deserves to speak the text:

"*I also feel that we should explicitly re-recognize the value of what I call interpretative inferences, for short. By that I mean unformalized assertions suggested by examination of economic history, contemporary economic events, particular economic activities, or even the results of parts of economic research; more precisely, I am referring to those assertions which aim at a validity wider than the cases examined, but whose exact domain of validity is not indicated* " (MALINVAUD, 1996, p 8). And adds a little further to explain his new position in relation to mathematical studies:

"*In the days of literary economics, most of the teaching was interpretative inference. Even today, interpretive inferences appear much more often than our methodology recognizes, when we speak of lived economic problems or economic policies. Such a situation is natural since, over vast areas of our domain, we have a not insignificant but vague knowledge. In this regard, let us note that interpretative inferences play a much greater role in other social sciences than economics (...) Rather than ignore these literary contributions, we should reflect on them and question ourselves on the quality criteria for which remains an important approach in large parts of our discipline*". (MALINVAUD, 1996, p 8).

It is true that mathematics is a very useful tool, "*but not an end in itself, that reasoning can find in the mathematical tool a powerful reinforcement goes without saying; on the other hand, that economic reasoning is confused with mathematical reasoning has catastrophic effects on research*" (BATIFOULIER, P.,and *al*. 2015, p 74).

M. Allais called this excessive mathematization of economics "*mathematical charlatanry*" or «*wild econometrics*". He explains what he called "*mathematical charlatanry*" as follows:

"*If mathematics constitutes, in fact, an instrument whose mastery is extremely precious, it is and can only be an instrument (...) For almost forty years contemporary economic literature has developed in a completely erroneous: the development of mathematical models totally artificial and totally detached from reality, and it is more and more dominated by a mathematical formalism which fundamentally represents an immense regression (...). Paradoxically from a scientific point of view, incomparably more care is*

[*] In recent years, most calls for papers in economics in Algeria, prefer (where textually require) econometric studies.

taken today in the mathematical elaboration of models than in the discussion of their structure, their hypotheses and their results from the point of view of the analysis of the facts (...)".(ALLAIS, 1989, p 46).

Regarding "*wild econometrics*":

"*But the misuse of mathematics is unfortunately not the only flaw in contemporary literature. In fact, we have seen a whole flowering of pseudo-theories based on a mechanical application, devoid of any real intelligence, of econometrics and statistics. All these theories represent the same characteristics: the elaboration of linear correlation models which are in reality only pseudo models, elaboration accompanied by a whole mathematical-statistical arsenal of wild econometrics which is completely unjustified and which gives the appearance for the naive of scientific theories when they are generally only empty shells* ".(ALLAIS, 1989, p 47).

This positioning is the result of objective reasoning, it concerns the very nature of political economy which is part of the social sciences, it analyzes complex economic and social processes, it does not only analyze quantities with the use abuse of mathematical formalization, but, above all and above all, it analyzes the relationships between men who are subjective beings. For that it must not apply the methods of the exact sciences, nor a mathematical language.

Conclusion

"*Theoretica*l" studies on finance and growth highlight the mechanisms by which competitive financial intermediaries are likely to influence economic development, responding to both savings and investment decisions. However, the most relevant question that can be asked concerns these measurement variables adopted to reconcile financial development. Indeed, while the theory, as we have seen, identifies the different services that financial institutions are likely to provide, such as risk mitigation and information asymmetry, the variables used for financial development adopted by financial institutions empirical contributions do not precisely measure these services. Rather, they measure the amount of credit extended by banks and other financial institutions, the liquidity, and the size and efficiency of financial markets. Therefore, this bias reflects the inability of econometric studies to relate the theoretical role of studies of standard theory of financial institutions to empirical indicators of financial development. This is the reason why other methods and other variables must be highlighted for more obvious and appropriate explanations to financial development and its contribution to economic growth.

Appendices

Table N°1:Summary of empirical studies on the case of Algeria

Etude	Objectifs	Méthodes	Résultats
(KHERBACHI, 2011)	Evaluate the impact of the financial sector on real activity for the Algerian economy for the year 2003	Simulation of the effect of an increase in credits to the economy as well as a decrease in banking activity using a real and financial social accounting matrix (MCSRF)	– There is a weakness of the multiplier effect in Algeria – Same results of work carried out on developing countries using the same approach.
(BENHABIB. ZENASNI, 2011)	Study the effects of the liberalization of the financial system on economic growth in Algeria.	the estimation of a sample of 38 observations by the method of cointegration of time series during the period 1970-2007.	– financial liberalization promotes the development and deepening of the banking and financial system; – It has a favorable effect on economic growth in Algeria.
(TOUATI KHERBACHI, 2011)	Evaluate the impact of the activity of commercial banks on the real sphere (2003).	Use of simulations based on the social accounting matrix (SAM).	– The Algerian banking sector would contribute to the development of the real sphere.
(ZENASNI. BENHABIB, 2011)	Study the relationship between capital account liberalization and economic growth in Algeria, Morocco and Tunisia.	Using the GMM technique	– The study shows that the liberalization of the capital account is a good factor to promote economic growth in the Maghreb countries.
(LACHEHEB. ADAMU. AKUTSON, 2013)	Examine the relationship between openness, financial development and economic growth in Algeria 1980-2010	Using the ARDL (Autoregressive Distributed Lag) cointegration framework through monetary and financial indicators .	– There is a long-term relationship between openness, financial development and economic growth. – openness has a significantly positive effect on economic growth.
(بن معزو و حمانة، 2013)	Study of the relationship between financial liberalization and economic growth in Algeria 1970-2010.	Use of the Chinn-Ito KAOPEN index to measure the degree of financial liberalization in Algeria during the study period.	– There is a negative relationship between financial liberalization and economic growth in the case of Algeria.
(BOUAICHI YAICI, 2014)	Evaluate the effects of financial liberalization on financial development in Algeria, Morocco and Tunisia.	Through a number of classic financial indicators as well as through two FIDEX indices	– Morocco has the most developed financial system, Tunisia with an average degree and Algeria with the weakest.
(بن علال، 2014)	Study of the relationship between financial liberalization, financial development and economic growth in Algeria. 1990-2011.	Use of the method of least squares across a number of indicators of financial development and financial liberalization.	– There is a negative impact between financial liberalization and economic growth.
(قنوني، 2014)	Study of the relationship between the development of the banking system and Algeria's economic growth from 1962 to 1989 and from 1990 to 2012.	Use of Marc Hay's econometric model.	– Banks can have a negative effect on economic growth if their credit activity and their power to create money are not controlled and are not controlled. – The role of the Algerian banking system remains inefficient.
(خاطر مفتاح، 2014)	Study of the relationship between financial development and economic growth.	Comparison of financial development indicators between three countries Algeria, Morocco and Tunisia.	– There is a relationship between financial development and economic growth. – Financial development indicators show improvement in Algeria

(BOULAREDJ TCHIKO, 2015)	Measure the impact of the bank's development on economic growth in Algeria, during the period 1990-2014.	Cointegration econometric analysis of time series during the study period.	– there is no relationship between financial development and economic growth in Algeria – The improvement in budgetary and monetary indicators is mainly attributable to other factors such as the rise in hydrocarbon prices.
(AIBOUD ADOUKA BENBAYER, 2015)	To study the influence of financial liberalization on economic growth in Algeria during the period 1980 to 2013.	Cointegration econometric analysis of time series during the study period.	– There is a positive two-way relationship between financial liberalization and economic growth in Algeria.
(زقرير، 2015)	Study of the relationship between the development of the banking system and the economic growth of Algeria (1980 - 2014)	Using the Autoregressive Staggered-Delay Model (ARDL)	– The existence of a positive impact of banking development on economic growth.
(MEDJAHED BENBOUZIANE, 2015)	Examine the relationship between financial development and economic growth in Algeria through the analysis of transmission channels (1970 -2012).	Cointegration econometric analysis of time series during the study period.	– There is no relationship between financial development and economic growth in Algeria – Financial development does not affect growth neither through the accumulation of capital, nor the productivity of capital – The study suggests a less developed financial system for Algeria.
(AZZOUZ., 2016)	Theoretical and empirical study of the relationship between financial development and economic growth in Algeria. (1970-2013)	Use of the cointegration method through three financial development indicators	– The relationship between financial development and economic growth is generally negative or insignificant. – The replacement of the growth indicator by that of the growth of the non-hydrocarbon sectors slightly improves relations, but this is not sufficient to confirm the importance of the financial system for the Algerian economy.

Source: compiled by ourselves from several documents

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