INNOVARE JOURNAL OF AGRICULTURAL SCIENCE

Vol 10, Issue 5, 2022

ISSN - 2321-6832

Research Article

CROWD FUNDING, COST OF CAPITAL AND OPTIMAL BEHAVIOR OF AGRIBUSINESS FIRMS

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Received: 30 September, 2022, Revised and Accepted: 17 October, 2022

ABSTRACT

This paper theoretically examines the viability of agribusiness crowd funding, characterized by the promise of very high returns on investment (ROI) to subscribers. To do this, we develop a capital allocation model that analyzes the impact of the cost of capital on the optimal behavior of the agribusiness firm. Then, we compare this optimal behavior with the observed behavior of the firm (stylized facts), in this context of very high cost of capital. The model results show a significant behavioral bias with respect to optimality, which reflects the inability of the agribusiness firm to reasonably and legally serve very high ROIs to crowd funding underwriters. The strategy of crowd funding agribusiness via very high ROIs is therefore not economically viable, thus confirming the results of the financial audit carried out on this sector in Côte d'Ivoire.

Keywords: Drying, Cocoa, Quality, and Dryer.

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INTRODUCTION

To cope with the shortage of bank financing and investment capital, agribusiness firms have set up an original financing model based on a participatory approach. Originating in Côte d'Ivoire from 2008-2009, crowd funding for agribusiness involves firms raising capital directly from the public (physical persons and corporations) by promising very high returns on investments (ROI). More specifically, agribusiness firms offer populations contracts relating to agricultural production. By this type of contract called "turnkey plantations", the subscriber invests money in exchange for a turnkey field, the production and sale of which are ensured by the companies. The promise of very high financial returns, inducing a high cost of capital, is based on the anticipation of exceptional agricultural yields obtained through the application of innovative high-yield farming techniques (use of high-yield seeds, special organic fertilizers, watering by drip system, assistance from foreign experts) and the acquisition of large machinery and other technologies.

This method of crowd funding, which enjoys the support of political and economic circles, has been presented both as the "deal of the century" and a mechanism capable of accelerating the structural transformation of African economies. Indeed, the new approach to development, centered on the promotion of agribusiness, makes it possible to establish essential links between the main economic sectors, thus accelerating the structural transformation, diversification and technological upgrading of African economies (Devlin and Kormawa, 2010). In addition, it stimulates economic growth, contributes to the reduction of poverty and social exclusion by improving the health and food security of the poor (Wilkinson and Rocha, 2008; World Bank, 2007a). The agribusiness sector can thus accelerate the continent's march towards prosperity. Moreover, Wilkinson and Rocha (2009) show empirically that the level of economic development of a country increases with the ratio between the share of GDP generated by agribusiness and that generated by simple farming.

But after operating for nearly four years, this agribusiness crowd funding strategy revealed its limits when an accounting and financial audit commissioned by the Ivorian government in 2017 concluded that it was not financially viable. In fact, unable to provide the very high returns promised to subscribers, agribusiness firms remunerated the investments of the first customers with the subscriptions of new entrants. This illegal practice of cavalry has been accompanied by the practice of reinvesting the funds collected in sectors other than agriculture, notably in real estate, in the pharmaceutical sector and in

Distribution (RPGTA, 2017). Since then, agribusiness crowd funding has been suspended, several agribusiness managers have been imprisoned or are still being prosecuted.

This article offers a formal analysis that attempts to reconcile what happened during the Ivorian experience and the theoretical behavior of an agribusiness firm. This paper is situated at the crossroads of three economic perspectives. The first theoretical perspective concerns the classic theory of firm financing. Brealey, Myers and Allen (2019) give a simplified version of the theorem of Modigliani and Miller (1958, 1963): when all the states of nature are taken into account in the calculation of ROI, the financial value of the firm is equal to the average price of these returns on investment calculated for all states of nature (case of complete financial contracts). In this case, the overall expected return on the firm's assets is moderate. It is only when all the states of nature are not taken into account (in the case of incomplete financial contracts) that the overall expected return on assets inflates excessively.

The second theoretical perspective deals with the role of moral hazard in financial contracts. Tirole (2006) shows the importance of limiting the external financial contribution (outside equity) and of obliging the firm to finance itself (inside equity) a minimum part of the investment costs. This kind of regulation helps ensure that the borrower has a lot to lose if the project fails. Holmstrom and Tirole (1997) show that auditing borrower activities is very important to limit abuse. The third theoretical perspective, focused on the economics of agricultural production, analyzes the effect of the cost of capital on agricultural production (Chambers, 1988). Du, Lu and Zilberman (2014) develop a capital allocation model that describes the behavior of a risk-neutral agribusiness firm that optimally allocates expensive capital for its agricultural production.

We apply these theoretical perspectives to the Ivorian experience. Here, the internal financial contribution (inside equity) was almost non-existent, which increases the risk of moral hazard. Moreover, the contracts offered by agribusiness firms do not take into account all the states of nature. Indeed, these firms promise extraordinary returns to gullible investors by forgetting to tell them that certain states of nature (those in which the agricultural project fails!) were not taken into account. We integrate the failure to take into account all the states of nature, the risk of moral hazard, and the high cost of capital in the theoretical framework developed by Du, Lu and Zilberman (2014), to study the impact of the high cost capital on the optimal behavior of the agribusiness firm.

Our model departs from it by taking into account a technological efficiency parameter and retains a unit cost of capital function where the reference model simplifies with a constant marginal cost. This theoretical model makes it possible to study the impact of the very high cost of capital on the optimal behavior of the agribusiness firm in terms of technological adoption, choice between contract production and self-production, elasticity of the final agricultural goods produced and marketed. Our objective is to verify whether there are distortions in the effective behavior of agribusiness firms with respect to optimality, when they benefit from crowd funding. We verify whether the latter's optimal choices in terms of technological adoption, arbitration between self-production and contract production, and the method of marketing the final product, are in phase or not with the real conditions

prevailing in the agribusiness sector. The rest of the article is organized as follows: we develop a capital allocation model that analyzes the effect of crowd funding on the optimal choices of agribusiness firms (section 2). Then, we give the results from this model (section 3). Section 4 concludes the article.

Theoretical framework

Stylized facts

The stylized facts come, for the most part, from the accounting and financial audit report drawn up by the working group on agribusiness in Côte d'Ivoire . We identify five main stylized facts:

• Stylized fact F1: The capital of agribusiness firms legally constituted in the form of limited liability companies or sole proprietorships, comes mainly from the resources of subscribers. These firms promise them very high ROI, of nearly 200% of the capital invested in the very short term (3 to 6 months)! This financing mechanism induces a financial structure of the agribusiness firm then characterized by a very high cost of capital. The internal rate of return of agribusiness projects is as summarized in the following table:

Table 1: Internal Rate of Return (IRR) of agribusiness projects

Project evaluation indicators	Values
Net Present Value (NPV) of the project	3 683 462 fcfa (=5599.53 euros)
Internal Rate of Return (IRR) over 5 months	65%
Annual IRR	234%

Source : Public Report of the Working Group on Agribusiness (RPGTA), 2017

[1] This working group, chaired by the Ivorian Public Treasury, includes the Central Bank of West African States (BCEAO), the Professional Association of Banks and Financial Institutions of Côte d'Ivoire (APBEF-CI), the National Financial Information Processing Unit (CENTIF), the Department of Economic and Financial Police (DPEF), the National Center for Agronomic Research (CNRA) and the Minister of Agriculture and Rural Development.

- Stylized fact F2: The audit of the agribusiness sector showed that the cultural innovation capacity of firms (technological efficiency) is not high enough. The local capacities for innovation by the farmers involved should therefore not be overestimated.
- Stylized fact F3: The agribusiness firm mainly uses production contracts with selected farmers.
- Stylized fact F4: Farmers selected for contract production have acceptable but not high enough technological efficiency.
- Stylized fact F5: The final agricultural goods relate to short-cycle speculation (tomatoes, cabbage, zucchini, green beans, livestock products: chicken, rabbit, eggs, etc.) that can be repeated over the duration of the contract to prevent the hazards. Due to the characteristics of their national and international market, these products are elastic goods: a variation in their prices induces a more than proportional variation in the opposite direction of their quantity demanded.

We develop a capital allocation model to analyze the impact of the very high cost of capital on the level of technological efficiency required, on the trade-off between self-production and contract production and on the degree of direct price elasticity required of products, at the firm's optimum. In other words, our model should make it possible to know if the stylized fact F1 requires the stylized facts F2, F3, F4 and F5 when the agribusiness firm maximizes its profit. For a company to obtain high ROI, it must have significant innovation capabilities and/or an ability to capture market surplus (low elasticity)

Assumptions

An agribusiness risk-neutral firm produces final agricultural goods that are processed, packaged or exported. This production is obtained using two types of inputs: capital consisting of the installation of agro-industrial packaging-transformation plants; agricultural raw materials. To obtain supplies of agricultural raw materials, the agribusiness firm resorts to two types of industrial organization: investing capital and producing the raw materials it needs itself (self-production by vertical integration) and buying part of these raw materials via agricultural contracts with farmers (contract production by vertical coordination). This firm faces three types of market: the final product market; the market for raw materials obtained under agricultural contracts and the capital market. The end product market is assumed to be in a monopoly situation. The company produces the final good in quantity q according to a concave production technology $f : f'(.) > 0$ and $f''(.) < 0$ (diminishing returns to scale), using a quantity of capital K_1 and a quantity x of agricultural raw materials, such that:

$$q = f(K_1, x) \quad (1)$$

We assume a complementarity between the two inputs used: $f_{K_1 x} > 0$. When the agribusiness firm itself produces the raw materials x_1 it needs, it does so by resorting to capital K_2 and various innovations that summarize its parameter of technological efficiency noted A. This allows it to increase its productivity. The corresponding production function g is written, specifying $g'(.) > 0, g''(.) < 0$ and $g(0) = 0$:

$$x_1 = g(A.K_2) \quad (2)$$

The market for raw materials obtained under agricultural contracts is assumed to be in a monopsony situation, in order to avoid extra-contractual marketing. Farmers under farming contracts produce raw materials in contractual quantity x_2 according to a technological efficiency parameter denoted B. As a result, the ratio B/A can be considered as a parameter for the adoption of agricultural innovations. The adoption of agricultural innovations by farmers under contract can thus be more or less complete, which is reflected in the relationship:

$$B \leq A \Rightarrow \begin{cases} \frac{B}{A} = 1 & \text{(case of complete adoption of innovations)} \\ \frac{B}{A} < 1 & \text{(case of incomplete adoption of innovations)} \end{cases} \quad (3)$$

The overall quantity of raw materials produced is : $x = x_1 + x_2 = g(K_2) + x_2$. Farmers under contracts are considered to produce the quantity x_2 taking into account the unit cost of the contract w and their technological efficiency parameter B according to the production function $k(.) : x_2 = k(B.w)$. Thus, the function of the unit cost of the contract that prevails on the market for raw materials obtained under agricultural contracts, in a monopsony situation, is written : $w = \frac{1}{B}k^{-1}(x_2)$. By defining $h \equiv k^{-1}$, this function is written :

$$w = \frac{1}{B}h(x_2) \quad (4)$$

In order to analyze the optimal behavior of the agribusiness firm facing a high cost of capital, it is necessary to establish its profit function. This is nothing other than the difference between its total revenue from the marketing of the final product and its total cost (sum of the cost of capital and the cost of the production contract). By noting p the market price of the final good and q its quantity, we formalize the market demand addressed to the final production of the supposed agribusiness firm in a monopoly situation as an inverse demand function p(q) with p'(q)<0, p''(q)<0.

Optimization program of the agribusiness firm

Knowing that the firm has the choice between "being serious" (with probability prob) or "cheating » » (with probability 1-prob), its profit function is an expected profit E(Π). When the firm is serious and invests in agribusiness, its profit is Π_agri. When she cheats by serving ROI via a Ponzi scheme, her profit is Π_ponzi ; this profit is assumed to be zero, without loss of generality, Π_ponzi=0. In this case, the expected profit of the firm is E(Π)=prob.Π_agri+(1-prob).Π_ponzi=prob.Π_agri.

[2]In reality, some agri business firms operate in a monopoly situation and others in a competitive situation. But we model the monopoly case because it is easier, from the results of the monopolistic case, to deduce the results of the competitive case.

[3]This takes place when the unconsidered states of nature come true.

When the firm cheats by investing the money raised in sectors other than agribusiness, its profit is $\Pi_{elsewhere}$, and the expected profit is $E(\Pi) = prob.\Pi_{agri} + (1 - prob).\Pi_{elsewhere}$. For the sake of simplicity, we discard this case and assume that the firm can only cheat by resorting to the Ponzi scheme.

The optimization program of the agribusiness firm then consists in choosing the triplet of inputs $\{K_1, K_2, x_2\}$ which maximizes its profit: $Max_{\{K_1,K_2,x_2\}} prob.\Pi_{agri}$, equivalent to $Max_{\{K_1,K_2,x_2\}}\Pi_{agro}$, that is :

$$Max_{\{K_1,K_2,x_2\}} p\left(f\left(K_1, x_2 + g(AK_2)\right)\right) f\left(K_1, x_2 + g(AK_2)\right) - r(K_1 + K_2)(K_1 + K_2) - \frac{1}{B}h(x_2)x_2 \quad (5)$$

We recall that K_1 and K_2 are respectively the capital used to produce the final good and the capital used for the self-production of agricultural raw materials. We have K_1+K_2=K since the total capital of the agribusiness firm is essentially composed of equity. The term r(K_1+K_2) is the unit cost of capital, and r(K_1+K_2)×(K_1+K_2) the total cost of capital. The promise of a very high return on investment (ROI) implies, for the agribusiness firm, to face a very high unit cost of capital in the optimization program above. This capital cost function can be viewed as an inverse capital demand function expressing an inverse relationship between the cost of capital and the quantity of capital : r_(K_i)^' (K_1+K_2)<0, r_(K_i)^'' (K_1+K_2)<0 ∀ i=1,2.

The first-order conditions of the above program yield (with ε the direct price elasticity of demand):

$$p_q f_{K_1} q + p f_{K_1} - (K_1 + K_2) r'_{K_1}(.) - r(.) = p f_{K_1}\left(\frac{1}{\varepsilon} + 1\right) - (K_1 + K_2) r'_{K_1}(.) - C(.) = 0 \quad (6)$$

$$p_q f_x Ag' q + p f_x Ag' - (K_1 + K_2) r'_{K_2}(.) - r(.) = p f_x Ag'\left(\frac{1}{\varepsilon} + 1\right) - (K_1 + K_2) r'_{K_2}(.) - r(.) = 0 \quad (7)$$

$$p_q f_x q + p f_x - h'.x_2 - h(x_2) = p f_x\left(\frac{1}{\varepsilon} + 1\right) - \frac{1}{B}h'.x_2 - \frac{1}{B}h(x_2) = 0 \quad (8)$$

These three equations (6),(7) et (8) show that at the optimum, the agribusiness firm produces up to the point where the value of the marginal product of each input {K_1,K_2,x_2 } is equal to its marginal cost. Moreover, by combining the equations (6) and (7) and usefully noting that r_(K_1)^' (.)=r_(K_2)^' (.), we show that at the optimum of the agribusiness firm, the marginal productivity of the capital used for the self-production of raw materials (A 〖.g〗 ^' (AK_2)=(dx_1)/(dK_2)) is equal to the marginal rate of technical substitution of the amount of capital for facilities relative to the amount of raw materials (〖TMST〗 _(K_1 x)=f_(K_1)/f_x), that is, formally:

$$g'(AK_2) = \frac{f_{K_1}}{A f_x} \Rightarrow A.g'(AK_2) = \frac{f_{K_1}}{f_x} \quad (9)$$

RESULTS OF THE MODEL

High cost of capital and technological efficiency of the agribusiness firm

By combining the equations (7) and (8), it comes that at the optimum, the marginal productivity of the capital that the agribusiness firm uses for the self-production of raw materials is equal to the ratio of the relative marginal cost of total capital to the marginal cost of recourse to the production contract, i.e. formally:

$$Ag'(AK_2) = \frac{(K_1 + K_2) r'_{K_2}(.) + r(.)}{\frac{1}{B}[h'.x_2 + h(x_2)]} \quad (10)$$

This equation (10) shows that when the cost of capital $r(.)$ becomes very high, the marginal productivity of capital used by the agribusiness firm for the self-production of raw materials $\left(A.g'(AK_2)\right)$ must also be very high at the optimum. This is possible if the technological efficiency parameter A is very high. Hence the following proposition:

Proposition 1: When the states of nature not taken into acount, come true, the firm can pay high ROI (high cost of capital) at the optimum only if it distorts its output by setting its technological efficiency at a very high level. This is not realistic because the stylized facts F2 highlight ordinary and not exceptional technological efficiency. In reality, the application of innovative high-yield cultivation techniques (use of high-yield seeds,

[4] This comes from the fact that the firm must save capital at the optimum. In other words, the more the cost of capital of the firm increases, the more its demand for capital must decrease at the optimum.

[5] The value of the marginal product is defined as the product of the marginal revenue of the final output and the marginal product of each input.

[6] We could have simplified the theoretical path of the analysis, by making an application with simple functions (production cost, production function) so as to have explicit formulas making it easier to follow the exposure of the model. Each proposition could then have been illustrated by explicit formulas, and the comparative statics resulting from these formulas would be simplified. But this did not allow to have the general results that we obtained in this paper.

From equation (10), we derive the expression for the optimal level of capital, K_2^* , the level of capital used for the self-production of agricultural raw materials:

$$K_2^* = g'^{-1}\left(\frac{B}{A}.\frac{(K_1 + K_2) r'_{K_2}(.) + r(.)}{h'.x_2 + h(x_2)}\right) \quad (11)$$

This level depends on the firm's total cost (via $r(.)$ and $h(x_2)$) and is independent of the final output demand. It is therefore possible to lower the optimal level of capital K_2 by reducing the firm's total cost without affecting its total revenue. The logic of profit maximization therefore requires the firm to save capital K_2. Faced with a very high cost of capital, it will therefore tend to source its raw materials more through agricultural contracts than through self-production.

A more rigorous proof of this result requires analyzing the effect of the very high cost of capital (r) on the optimal final production (q^*), the optimal level of capital (K_2^*) for the self-production of agricultural raw materials, the optimal level of capital (K_1^*) for plant construction and optimal contract production of raw materials (x_2^*). For this, we study the second-order conditions of the optimization program (5) of the agribusiness firm, using the bordered Hessian of the problem. We then show that $dq^*/dr < 0$, $dK_1^*/dr < 0$, $dK_2^*/dr < 0$ et $dx_2^*/dr > 0$ (*proof in appendix 1*). We derive the following lemma (identical to that of Du et al., 2014):

Lemma 1: Faced with a very high cost of capital, the agribusiness firm optimally produces less final output, with less capital for self-production, less capital for building facilities and with more raw materials obtained through agricultural contracts.

For the agribusiness firm to optimally save K_2 capital through contract farming, the contract farmers must be able to produce with full technology adoption. To see this, we first calculate, from the equation (11), $\partial K_2^*/\partial(B/A)$ via the chain rule, it comes:

$$\partial K_2^*/\partial(B/A) = (\partial g'^{-1}/\partial F).(\partial F/\partial(B/A)) = g''^{-1}(.).\frac{(K_1 + K_2) r'_{K_2}(.) + r(.)}{h'.x_2 + h(x_2)} < 0 \quad (12)$$

This relation (12) shows that when the technological adoption parameter B/A increases, the optimal level of capital used for self-production K_2^* decreases. Intuitively, this suggests that the more contract farmers adopt innovative practices, the higher their production of raw materials and the less incentive the agribusiness firm has to produce these raw materials itself: it therefore saves capital, at the optimum. In case of complete technological adoption (B/A=1), the optimal level of capital for self-production K_2^(**) is lower than the optimal level K_2^* in case of incomplete technological adoption (B/A<1) . Formally, we have:

$$K_2^{**} = g'^{-1}\left(\frac{(K_1 + K_2) r'_{K_2} + r}{h'.x_2 + h(x_2)}\right) < K_2^* = g'^{-1}\left(\frac{B}{A}.\frac{(K_1 + K_2) r'_{K_2} + r}{h'.x_2 + h(x_2)}\right) \quad (13)$$

Then, we show how complete technological adoption is the one that optimizes the objective function of the agribusiness firm facing a very high cost of capital. It suffices to determine the level of technological adoption that minimizes the optimal level of capital used for self-production. Formally, this amounts to solving the following program:

$$\left(\frac{B}{A}\right)^* = ArgMin_{0 \le \frac{B}{A} \le 1}\left\{g'^{-1}\left(\frac{B}{A}.\frac{(K_1 + K_2) r'_{K_2} + r}{h'.x_2 + h(x_2)}\right)\right\} \quad (14)$$

We show that the solution is a complete technological adoption (*proof in appendix 2*), that is:

$$(B/A)^* = Max_{0 \le B/A \le 1}\{B/A\} = 1 \qquad (15)$$

We summarize these results in the following proposition:

Proposition 2: When states of nature not taken into acount, come true, the firm can only pay high optimal ROIs if it distorts its production by sourcing raw materials through agricultural contracts with farmers who fully adopt technological innovations (very high technological efficiency). This optimal behavior is not realistic, by virtue of the stylized fact F4.

High cost of capital and direct price elasticity of demand for the final product

In the previous analyses, we focused on the consequences of the very high cost of capital on the methods of production. To be able to pay very high returns to its subscribers (very high cost of capital), the agribusiness firm must produce at exceptional agricultural yields by implementing exceptional technological and cultural innovations and/or by entering into contracts with farmers who fully adopt these innovations. However, this is not self-evident. However, the analyzes carried out do not take into account the possibilities that the agribusiness firm has of freeing itself from these too restrictive technical-productive conditions by taking into account the markets of the final product. The issue of the high cost of capital may not be a major obstacle for the agribusiness firm in the presence of a lower elasticity of demand for the final product.

In fact, in the event of a lower elasticity of demand for the final product, the agribusiness firm is not obliged to have a hypothetical exceptional productivity to face the high cost of capital. Because of the less elastic demand, it can cope with the high cost of capital by increasing its total revenue if it has the possibility of influencing the price of the final product. In this case, the firm has an interest in increasing its production of final output. More generally, we show that when the elasticity of demand for the final product (ε) decreases, the optimal level of capital (K_1^*) for plant

[7] In case of zero technology adoption($B/A = 0$), the optimum level is $K_2^* = g'^{-1}(0)$, which implies $AK_2^* = Ag'^{-1}(0)$ and so $g'(AK_2) = 0$. This means that the marginal productivity of capital used for self-production is zero, which is only possible when $K_2^* \to +\infty$,, given the assumptions about the function $g(.)$. In this case, we end up with a degeneration of the optimization program of the agribusiness firm.

We also show that to reach the optimal profit, the agribusiness firm does not necessarily need to produce more. It can even maximize its profit by producing less final output while saving capital. Indeed, at the optimum, the marginal revenue of the firm is equal to the marginal cost at a lower level of production. This reduction in the production of final output is achieved by simultaneously reducing the levels of the two inputs that are capital K_1^* and raw materials x^*. Starting from the relationship $x^* = x_1(K_2^*) + x_2^*$ and knowing that the use of capital for the self–production of raw materials (K_2^*) does not change when demand variables change, $x_1(K_2^*)$ does not vary. Therefore, the reduction in the production of final output goes hand in hand with a reduction in the optimal contractual production of raw materials (x_2^*). Thus, the agribusiness firm saves capital K_1^*.

Thus, when the demand for the final product is less elastic, the agribusiness firm is not obliged to have a hypothetical exceptional productivity to face the high cost of capital. It can free itself from these overly restrictive technical and productive conditions by influencing the price of the final output upwards. We have the following proposition:

Proposition 3: When the states of nature not taken into acount, come true, the firm can only pay high optimum ROIs if it distorts its output by moving towards final products with low price elasticity. This optimal behavior is not realistic because according to the stylized fact F5, agribusiness firms produce and market goods with high elasticity (tomato, cabbage, zucchini, green bean, livestock products: chicken, rabbit, eggs, etc.).

CONCLUSION AND POLICY RECOMMENDATIONS

This article develops a capital allocation model to analyze the impact of the very high cost of capital on the level of technological efficiency required, on the trade-off between self-production and contract production and on the degree of direct price elasticity required of marketed agricultural end products, at the firm's optimum. This model shows that agribusiness firms can serve very high ROI only under the following conditions: they have exceptional capacities for technological innovation; they favor contract production of raw materials over self-production; they establish contracts for the supply of raw materials with farmers with very high technological efficiency; they produce and market weakly elastic agricultural final goods. However, with the exception of the second condition (privileged contractual production), all the other optimal conditions are not met by agribusiness firms. In other words, given the conditions under which they operate, these firms cannot reasonably and legally serve such high ROI to crowdfunding subscribers.

These results highlight the lack of economic viability of agribusiness crowdfunding through very high ROIs. They therefore confirm the results of the financial audit carried out on the agribusiness sector. One solution could be the quest for exceptional agricultural yields through cultural innovations. But this way, certainly not impossible, remains utopian. Another solution could consist, for agribusiness firms, in focusing on weakly elastic agricultural products so that the repercussion of ROI in prices does not lead to a reduction in total revenue, preventing the firm from maximizing its profit. But the prices of agricultural products risk being too high because of too high ROIs, which, even under conditions of low price elasticity of demand, is not sustainable in the medium and long term. A better solution lies in public regulation of the agribusiness sector. At the heart of the bankruptcy that we describe, there was a lack of control of the activities/contracts of the Ivorian agribusiness firms whose projects did not offer credible returns.

Such regulation should aim to strengthen the specific regulatory framework of the sector by reducing the risks of non-compliance of the agribusiness sector. This should avoid utopian promises of abnormally high ROI. Regulation can also consist in limiting the external financial contribution and obliging the agribusiness firm to finance itself a minimum part of the investment and production costs. Finally, this regulation must be extended to the banking sector, especially since the ROI, which is much higher than the return on bank investments, is the condition allowing agribusiness firms to mobilize crowd funding, in a context of bank underfunding. In other words, these high ROIs result from the potential competition between the banking sector and the agribusiness sector to capture financial savings from the public. Better regulation must favor effective coordination between the banking sector and the agribusiness sector.

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