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"Project Finance" y desarrollo económico. Estudio de un caso

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Resumen. El uso de la técnica de gestión de proyectos, cuya financiación está garantizada por el propio proyecto gestionado, denominada financiación de proyectos sin recurso o, más habitualmente "Project Finance", puede emplearse para financiar y gestionar determinados proyectos de desarrollo local en áreas fuertemente deprimidas. El trabajo muestra un caso real de aplicación de esta innovadora técnica de gestión en una pequeña aldea agrícola etíope. Se puede observar que el proceso va mucho más allá del simple cálculo financiero para entrar de lleno en la gestión de todos los riesgos implicados en el proyecto de desarrollo: activos subyacentes, participantes, condiciones naturales, factores económicos, cambios regulatorios, injerencia política y cambios legislativos. La técnica permite la autofinanciación del proyecto de desarrollo gracias a que es el propio activo el que genera dicha financiación y ello permite impulsar la creación de otros activos similares que mejorarán la calidad de vida de la población. En el caso analizado, la construcción de un pozo puede dar lugar al cultivo de unas cuatro huertas que no sólo mejorarán la calidad alimenticia de la población sino que además permitirán financiar la construcción de nuevos pozos con sus huertas anexas. Este ciclo termina una vez que todas las familias del poblado disponen de sus propias huertas.
Palabras clave: Project finance; Desarrollo económico; Mitigación de riesgos; Áreas deprimidas.
Claves Econlit: G39; O12; O22.

[en] "Project Finance" and economic development. A case study

Abstract. This work shows how is possible to finance and to organize development projects in heavily depressed areas using a "project finance" method. Project finance is the financing of a project based upon a non-recourse financial structure, in which project financial resources are paid back from the cash flow generated by the project. The paper shows a real case of application of this innovative management technique in a small Ethiopian agricultural village. It can be seen that the process goes far beyond simple financial calculation to fully enter into the management of all risks involved in the development project: underlying assets, participants, natural conditions, economic factors, regulatory changes, political interference, etcetera. The technique allows the self-financing of the development project because it is the asset itself that generates such financing and this allows to promote the creation of other similar assets that will improve the quality of life of the population In the case analyzed, the construction of a well can lead to the cultivation of four orchards that will not only improve the food quality of the population but will also allow the financing of the construction of new

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wells with their annexes orchards. This cycle ends once all the families of the village have their own orchards.

Keywords: Project Finance; Development; Risk mitigation; Depressed areas.

1. Introduction

The "Project Finance" is a financial analysis technique that values those investment projects which have no other assets to respond for the losses or debts generated in the case of not being profitable (Julián & Mascareñas, 2014). This technique is usually used to finance large infrastructure projects such as: highways, tunnels, ports, channels, etc. The "Project Finance" has a very specific methodology that can be used in other types of projects different from those previously described and more specifically in economic development projects in heavily depressed areas.

In this paper, we will analyze a real case of Project Finance that has promoted the development of a strongly underdeveloped area[4], improving living conditions in a group of villages in the center of Ethiopia (Urquía-Grande & Del Campo, 2017) whose inhabitants have basically been fed with teff since immemorial. Teff is a cereal that contains dietary fiber, iron, proteins and calcium and through which a bread called n'jera is made. This cereal is not only its source of food but is also used as a currency. Many transactions are paid with teff sacks. For some expenses the teff is exchanged for the national currency, the birr, and payments are made in birrs. Therefore, a bad harvest of teff has a negative impact on people's lives because they will not only have less food but also less financial capacity to cope with other needs.

One way to break with this secular trend is to expand its food range, which is not easy due to the scarcity of water in the area. The rainy season goes from the end of June to the middle of September. If an adequate supply of water is available, orchards could be organized which would produce potatoes, garlic, beet, spinach, carrot, cabbage and onions. This would improve the population´s health as well as allow more teff to be exchanged for money. This money could be used not only for health but also, for example, to improve the education of children and young people in the community. The cheapest (and the only possible) solution is the construction of wells that extract the water accumulated in the subsoil from the rainy season. This allows the irrigation of four orchards of 100 m^2 that allow the self-consumption of four families of five members and generates enough sales to design the well´s financing plan.

The idea is that the cost of building the well is self-financed through the surplus generated by the orchard. And this is where the Project Finance technique appears.

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[4]   On rural cooperativism see for example (Cabaleiro y Fernandez-Feijoo, 2007).

It is based on three key aspects: there is an investment in a real asset with a long useful life (the well), it is an independent project whose financing must be organized and, finally, the asset itself serves as a guarantee and generator of the cash flows. The well is the only guarantee and not its users. (Finnerty, 2007) (Nevitt & Fabozzi, 2000).

To have application in such a depressed and traditional area as the one analyzed here, the Project Finance must be structured in a very simple way so that it is easily understandable by decision makers who do not have any financial background. In that sense and following (Kensinger & Martin, 1989) the asset will be a set of wells and the cash flows that will be used for payment will come from the return obtained from the sale of the harvest, thanks to the water coming from the wells. Another requirement pointed out by the authors is that the life of the project must be limited so, in this case, it will end when the water needs of the entire village are met. As the cash flows will be linked to the harvests obtained with the water from the wells, any problem derived from them will force a renegotiation of the payment conditions if these can no longer be met.

2. The risk matrix

The project finance technique gives great importance to the "risk matrix" which identifies the risks that can jeopardize the project. Once identified, it is easier to manage and mitigate them. This is specially relevant due to the fact that the viability of the project depends on the expected cash flows with no further guarantees. This does not happen in corporate finances where both the expected cash flows and the assets of the company or other business serve as guarantors of the risks assumed by investors. This matrix synthesizes in a figure the different risks detected, situating them in relation to their probability of materialization and their impact in case that this will happen.

This graphic vision allows to establish the different strategies to follow. "The existence of a risk with a potentially large impact and a high likelihood of occurrence would lead to an exacerbated risk and the possibility of the global paralysis of the project" (Julián & Mascareñas, 2014). If the potential impact is high but the probability is low, it is recommended to ensure the risk. If the potential impact is low and the probability high, the risk must be managed in order to mitigate it. Finally, if both the potential impact and its probability of occurrence were low, the strategy to follow should be to ignore the risk (Ibid.).

The risks that threaten the project can be classified according to whether they affect (1) the asset itself, that is in this case, the wells; (2) to the stakeholders involved in the project, (3) natural conditions, (4) economic factors and (5) others.

2.1. Risks related to assets: the wells

- Risk of collapse during construction: the beneficiaries of the wells have decided to participate in its construction with the aim of reducing costs. But they do not know how to dig in a safe way. Due to the characteristics of the land, there is a risk of collapse above four meters deep. The impact of this risk is very high

and its probability is medium. To limit it, only experts are allowed to dig. The beneficiaries can collaborate by collecting materials.

- Vandalism: there is no external security measure that protects the wells from vandalism. Even so, being a good that benefits several families, all from the same village, it is assigned a very low probability and a medium impact. The impact would be the damage of the water collection mechanism that should need to be restored or replaced. As a mitigating measure, a spare mechanism can be stored. That would also be useful for the following risk.

- Breakdown: the probability of this risk is high but its potential impact is low since it is a manual well. Solving the possible failures is very simple because the mechanisms are very rudimentary. A person from the NGO will regularly visit all the wells to check their good use status and define preventive maintenance actions to reduce the probability of this risk.

- Fall of an animal: if an animal fell into a well, it would endanger the quality of the water. A medium probability is assigned. It can be reduced to low if all wells are covered or protected with fences. The impact is evaluated as a medium one since water quality can be recovered within a week.

Figure. 1. Graphic example of risk matrix of assets.
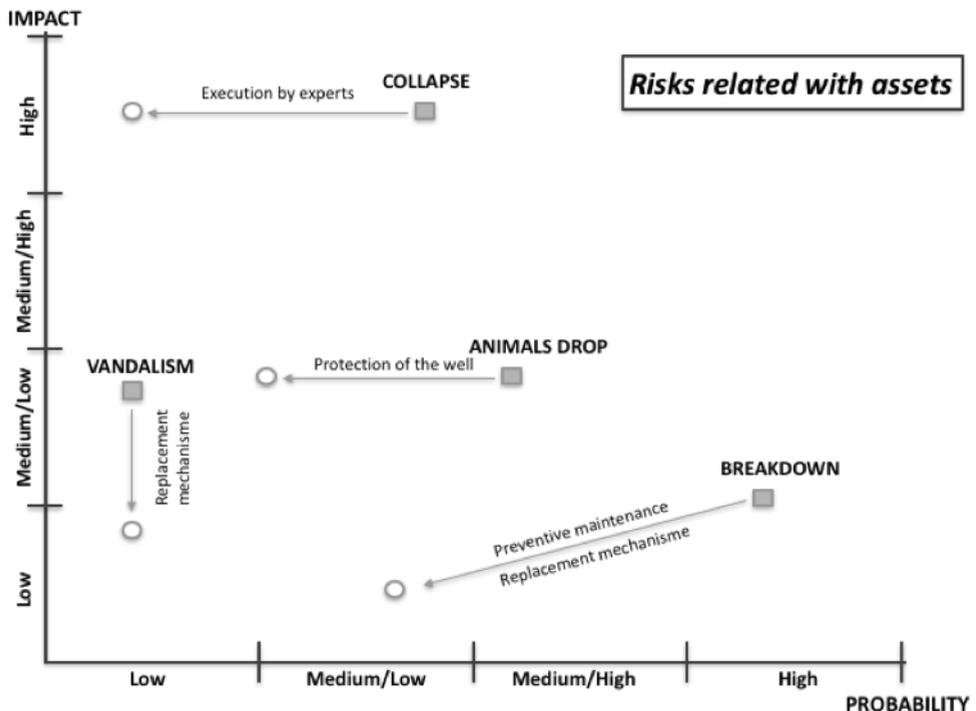
Source: Garayalde 2014: 128.

2.2. Risks related to the stakeholders involved

- Risk of loss of adhesion. As the money collected is applied to the construction of the next well, there is a risk that the beneficiaries will consider that they are paying to benefit other families and are not aware that they are paying to have water. They will have the obligation to pay until the needs of the whole village are met. The first beneficiaries pay more but have water before. The latter do not pay or pay less but have had to wait longer in order to own a well. In the negotiations prior to the start-up of the project, this aspect has been difficult to manage. It is a risk of high initial probability and also high impact. The reduction of its probability is key. It is important to dedicate time to explain how the project works and how the wells are financed.

- Conflict between families. These conflicts may arise before, during and after the construction of the well. Previous problems can be due to bad neighborly relations. It is fundamental that the four beneficiary families of the same well are related. During the construction of the well, conflicts have also been detected if the contribution of the families is unequal, either in terms of the work performed by each of them or the materials brought. When the well is already in use, one of the families may not pay their fee. This risk is evaluated with a medium probability but with a high impact. To protect the project, all the families must sign a clause in which they commit to asume the proportional part of the unpaid quota. The conflict with the family that has not paid, must be resolved outside the project. If necesary, a penalty of expulsion can be decided for the family who did not pay. That would operate as a mitigant.

-Management of the project. The involvement of the head of the village or a local authority, representative of the families linked to the project, as well as the continuous follow-up by the representatives of the NGO which organizes the project is fundamental. This type of Project, with a solidary character, requires relationships based on trust. The training courses, the regular meetings, the visits should favor this close relationship. Being a long-term project, this factor is crucial. If this spirit is not maintained, there is a high risk that the project will be interrupted. Initially it is a risk of high probability and high impact.

- Illness, or pregnancy of the responsible of the harvest. It has been established that the woman would be the one responsible for the orchard in the family. The risk of illness or disease is high but the family structure, in which all members work in the garden, mitigates the risk of less harvest and therefore the risk of defaults. The awareness that this is a project that responds to the family unit and not only the person in charge must operate as a very important reducer. The impact, in this case, is considered medium since there is a cause reasonably understandable by the community.

- Do not plant. One of the problems detected with previously constructed wells has been that some families have only used water from the well to drink, wash and cook but have not planted an orchard. It is initially evaluated as medium impact and medium probability. An appropriate choice of the location of the well, close to all the orchards that it has to irrigate should reduce this risk. The correct continuous training should also reduce the probability. Also, the selection of the initial families acts as a mitigating reducer since it delays the risk over time.

- Do not sell. Although the family has decided to plant, it is necessary to sell part of the harvest to face the payment of the established fees. There is a risk that the entire harvest will be dedicated to self-consumption. The variable that most influences the decision to sell is the size of the orchard (Garayalde, 2014). Families have to be selected so that they have enough land to be able to harvest surpluses and be able to meet payments. An orchard of 100 m^2 should mitigate this risk.

2.3. Risks related to natural conditions

- Drought. Droughts are recurrent in the Horn of Africa. There is a lack of experience in order to know the impact of a year of drought on the flow of the wells and, therefore, on the crops that can be obtained. The impact on the price of vegetables can not be quantified. Vegetables are a type of non-traditional food in the area so there are no records of previous drought. In the project time framework, the probability is considered médium/high and the impact medium. There are no measures to reduce probability. With respect to impact mitigants, crop insurance or similar mechanisms can not be considered. The only strategy is to improve training in water economy and to select vegetables in which the impact is reduced the most.

- Insufficient flow. Although it is a matter of digging in areas with a high probability of finding water, there are no exhaustive studies that minimize the risk that the flow of the well is not enough to irrigate all the orchards chosen. In this case, the fee to be paid must be renegotiated with the families involved. Depending on the phase of the Project and the number of wells already in use, the impact of this risk is greater or smaller.

- Pests. The biggest risk to the harvest is a plague of red ants. The probability is evaluated as medium and so is the impact. This risk would be mitigated by the correct use of pesticides or natural repellents.

2.4. Risks related to economic factors

- Price of the seeds. A rise in the price of seeds should have a low impact on the income generated because it is a proportionally small cost. Some crops, such as potatoes, do not even require the purchase of seeds if potatoes from the previous crop are conserved. In addition, it will affect all farmers equally. Therefore, the impact is also low and the probability is medium. Given the scale of the project, no measures to reduce probability are proposed.

- Variation in the price of vegetables. It is a very narrow market since the consumption of vegetables in the region is very recent and not yet widespread. If all the families planted the same vegetable and only one vegetable, a collapse of prices can be followed[5]. A low probability and a medium / low impact are assigned. A minimum of five vegetables is recommended as a mitigation measure.

- Teff price. The economy of the area is not monetized. What sets the price of the products is the price of teff. For the purpose of the project, it is considered that the probability and impact will be low because the revenues and construction costs of the new wells will fluctuate in the same direction.

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[5]   As happened with the onions in 2013 (Garayalde, 2014).

2.5. Other risks

- Regulatory changes, political interference, law changes. Ethiopia is a heavily intervened country, in which ownership of the land belongs to the State. Farmers are mere usufructuaries. There is a high political risk. Even so, since it is a small-scale project, public intervention does not seem likely, although its impact would be medium / high. The institutional presentation of the project and promoting sponsorship, even if passive, by the Public Administration would reduce probability and, above all, mitigate this impact. The authorities have to be involved as theoretical drivers.

3. Analysis of the financial structure of project

In May 2013, when the project was being prepared, the construction of a well involved an initial investment of 19,795 birrs (US $ 892) and three years later it was 23,000 birrs (US $ 1,037). The cost increases on average 5.13% per annum. Wells have to be constructed in the month of May, in the dry season. From the extracted water three crops can be obtained: one in November, another in February and the last in May. A well allows supplying four families, if the hypothesis is maintained that the water will be used for drinking, washing and for watering each one of the family´s orchard of 100 square meters of surface.

With these hypotheses, let's calculate how much a family can obtain for the sale of their crop. The optimal combination of vegetables to plant is: potatoes, garlic, carrots, cabbages and onions; in a surface of 20 m^2 for each of them (Garayalde, 2014). Table 1 shows the production per square meter estimated and the prices in birrs of each kilo produced and sold (these prices refer to the year 2013 start date of the project).

Table 2 is obtained from the data in table 1, knowing that each vegetable is planted on a surface of 20 m^2. This table shows the production in birrs by orchard and harvest. For example, the average value of the potatoes is obtained from:

$$3.5 \text{ kg/m}^2 \text{ x } 14.42 \text{ birrs/kg x } 20 \text{ m}^2 = 1,0094 \text{ birrs}$$

Table. 1 Production (kg/m2) y Prices (birrs/Kg).

Production		Kg/m^2			Prices (Birrs/kg)		
	Min	Average	Max		Min	Average	Max
Potato	3.0	3.5	4.0		10.84	14.42	18.00
Garlic	1.5	2.3	3.0		15.89	22.23	28.57
Carrots	3.0	3.5	4.0		7.17	9.05	10.93
Cabbages	2.0	3.0	4.0		9.11	11.87	14.63
Onions	5.0	5.5	6.0		5.76	9.00	12.24

Source: (Garayalde, 2014 :149).

The minimum and maximum values have been calculated the same way in order to obtain the most pessimistic and most optimistic[6] production in birrs. This will allow us to estimate the standard deviation necessary for the Wiener process that will estimate future income.

Table. 2. Value of production in birrs per orchard and harvest.

Production (Birrs/orchard/harvest)		Min	Media	Max
Potatoes		650.4	1,009.4	1,440.0
Garlics		476.7	1,000.4	1,714.2
Carrots		430.2	633.5	874.4
Cabbages		364.4	712.2	1,170.4
Onions		576.0	990.0	1,468.8
		2,497.7	4,345.5	6,667.8

Source: own elaboration.

Once we know the value of the production by orchard and harvest, we can calculate the annual value multiplying by three annual harvests with which the value of the annual production of an orchard is obtained. As it turns out that each well serves four orchards, the value of the average annual production in birrs generated by it is equal to: 4,345.45 birrs x 3 harvests x 4 orchards = 52,145.4 birrs. The minimum value is 29,972.4 birrs and the maximum is 80,013.6 birrs.

In the case that we are analyzing, the two harvests that belong to the dry season can obtain only 50% of the production indicated above (table 2), while 100% of the production is achieved in the rainy season. Therefore, we must lower the values indicated in the previous paragraph by multiplying them by a factor of 2/3 to adapt them to the weather conditions. The value of the annual average production will be of 34,763.6 birrs (value ranging between 19,981.6 and 53,342.4). If we calculate the standard deviation of these three values assuming a triangular distribution, we obtain a result of 18.94% of the mean value[7].

What interests us when it comes to the structure of the Project Finance is knowing how much money is available annually to meet the cost of the well. The idea is to dedicate 20% of the annual production in birrs to the return of this cost, leaving the rest at the disposal of the families that own the four orchards. This way, the initial average payment for the first year can be equal to: 34.763.6 x 0.2 =

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[6] Although the lowest price and the smallest production do not have to match (in fact it is rather the other way around: when there is less production the prices should be higher and the opposite).

[7] See (Suárez, 1995: 161).

6.957,2 birrs, that is, 35% of the cost; at this rate in three years it would have been totally repaid.

3.1. Estimation of the resources generated by the well to cover its cost

We can not depend on the average value because prices and production vary constantly. This forces us to simulate the value of future production that will be used to defray the cost of construction of the well. We assume this value follows a generalized Wiener process, also known as Brownian geometric motion represented by the following discrete equation:

$$(1)\ \Delta x = \mu\ x_{t-1}\ \Delta t + \sigma\ x_{t-1}\ \varepsilon\ \sqrt{\Delta t} = (\mu\ \Delta t + \sigma\ \varepsilon\ \sqrt{\Delta t}\ )\ x_{t-1}$$
$$(2)\ x_t = x_{t-1} + \Delta x$$

Where, x_t is the current value of the available production for the Project Finance, μ refers to the tendency (in our case, the estimated annual average inflation rate: 5.13 %), σ is the noise of the tendency. This concept is defined as the variability of the path followed by the values of the random variable x. The amount of noise or variability is σ times a Wiener process. A process of this kind has a standard deviation of one. For this reason, a Wiener process will have a standard deviation of $\sigma = 18.94\%\sqrt{\Delta t}$ (where $\Delta t = 1$ year). Finally, ε is distributed as a normal distribution (0,1):

$$(3)\ x_t = x_{t-1}\ (1 + 0.0513\ \Delta t + 0.1894\ \varepsilon)$$

The initial value x_0 is 6,613.5 birrs that results from subtracting the average value from year one to the inflation rate. In figure 2 it is shown one of the simulated paths of the values of x for a period of 15 years. Furthermore, in figure 3 it is shown the accumulated value of the random variable x in the 15 year period and the cost of the well. According to this simulation the well´s cost is fully paid around 3.5 years (approximately 10-11 harvests).

Figure. 2. A simulation of $x_t = x_{t-1} (1 + 0.0513 \, \Delta t + 0.1894 \, \varepsilon)$
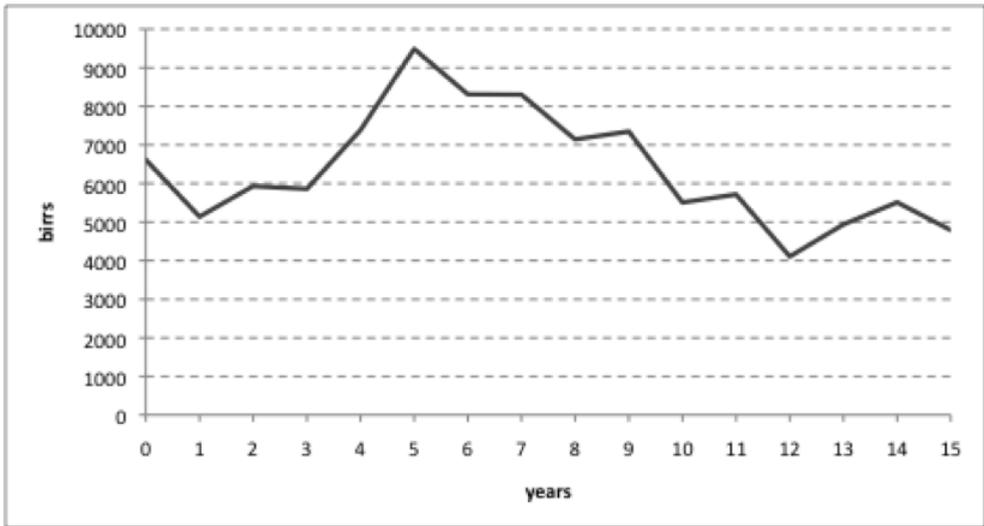
Source: self made

Figure. 3. Value of accumulated x based on its annual value of figure 2 and cost of the well.
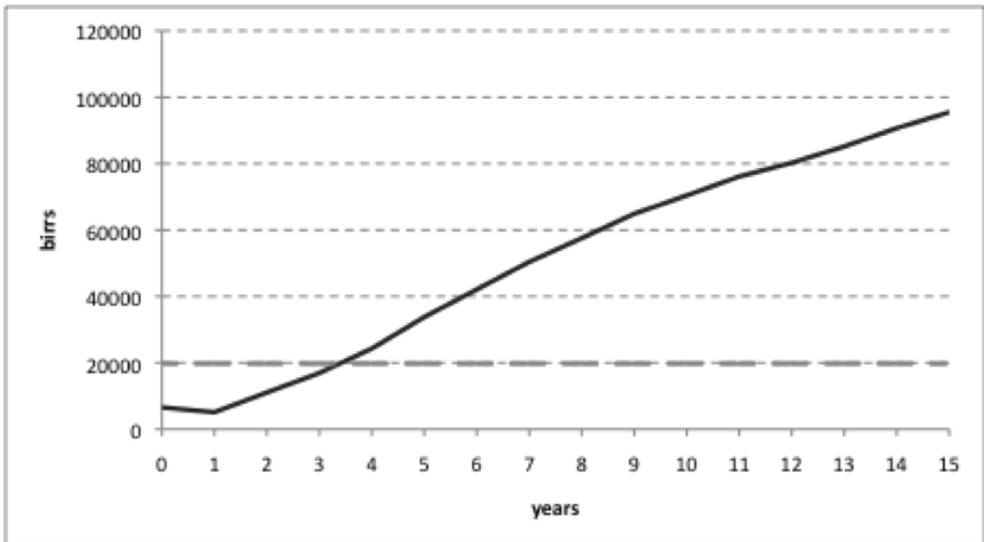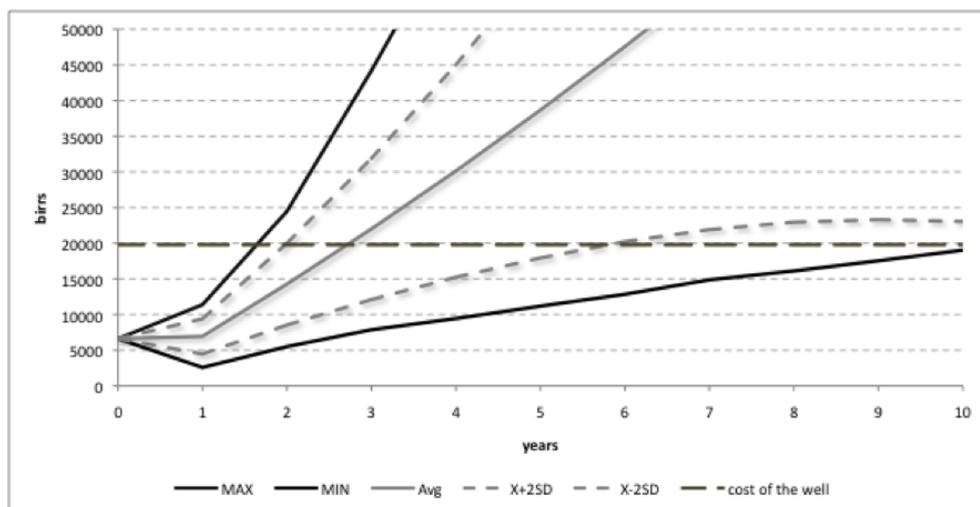

Source: self made.

A series of simulations (3000 in our case) are made in order to determine the maximum and minimum value of the accumulated random variable x. This will allow us to determine a range of terms to give back the total cost of the well. In figure 4 the results of the simulations are shown. The two lines at the limit of the

cone represent the maximum and minimum value obtained each year from the accumulated cash to deal with the cost of the well (horizontal discontinuous line). In the best case scenario it will take 1.5 years (4-5 harvests) to return the total cost of the well. In the worst-case scenario, it will take 10 years to return (30 harvests). The average value is almost 2.5 years (7-8 harvests), represented by the continuous grey line. The two lines that flank the representative line of the mean value indicate ±2 annual standard deviations (95.44% of cases). This will have as a result an annual range of 2 to 6 years (6 to 18 harvests) to return the well´s cost.

Figure. 4. Results of the maximum and minimum values, average value and mean value ± 2σ of 3,000 simulations of the accumulated value to return the cost of the well.

Source: self made.

4. Project Finance as a driver of development

In the previous section we have seen how to structure the Project Finance. The well would be financed through the harvests due to it. The well will create wealth and well-being. In the case of the village of Yate, an NGO financed the construction of two wells in 2013 but did not have resources to provide wells for the 29 families in the village. Since the two donated wells would cover the needs of 8 families, it was agreed that the beneficiaries of those two initial wells will give 20% of the income generated by each well to finance the rest of the necessary wells (five more).

That way, the first two wells would finance the third. This third, together with the first two, would support the financing of the fourth, and so on. The families that were supplied with water from the first two wells thanks to being chosen the first ones would pay 20% of the income of their crops to finance the rest of the wells, while the owners of the last wells would pay nothing.

Mathematically we could say that if the random variable x_1 is the cash flow that is expected to be generated by the well in year 1 (see the previous section) then $2x_1$

is the cash flow generated by the two initially donated. At the end of the first year we can have two scenarios (c_1 is the cost of a well in year 1):

If $2x_1 \geq c_1$, the third well is built, leaving a remnant $R_1 = 2x_1 - c_1$
If $2x_1 < c_1$, the third well is not built and the remnant is $R_1 = 2x_1$

Depending on these scenarios, year 2 will happen as follows (c_2 is the cost of a well in year 2):

   a) If $R_1 = 2x_1 - c_1$ (there are 3 wells)
      If $R_1 + 3\ x_2 \geq c_2$, the fourth well is built. $R_2 = R_1 + 3\ x_2 - c_2$
      If $R_1 + 3\ x_2 < c_2$, the fourth well is not built. $R_2 = R_1 + 3\ x_2$
   b) If $R_1 = 2x_1$ (there are 2 wells)
      If $R_1 + 2\ x_2 \geq c_2$, the third well is built. $R_2 = R_1 + 2\ x_2 - c_2$
      If $R_1 + 2\ x_2 < c_2$, the third well is not built. $R_2 = R_1 + 2\ x_2$

The number of scenarios grows at 2^t in such a way that, for example, the fifth year there may be $2^5 = 32$ possible scenarios. In addition, it may be the case that there is enough remaining to build more than one well the same year. In figure 5 you can see a simulation of this process: in year 0 two wells are built (the donated ones), the third well is built in year 2, the fourth in year 4, the fifth and the sixth in the year 5, and in the following year the operation is completed with the construction of the seventh and last well.

Figure. 5. Simulation example of the years in which the seven agreed wells are built.
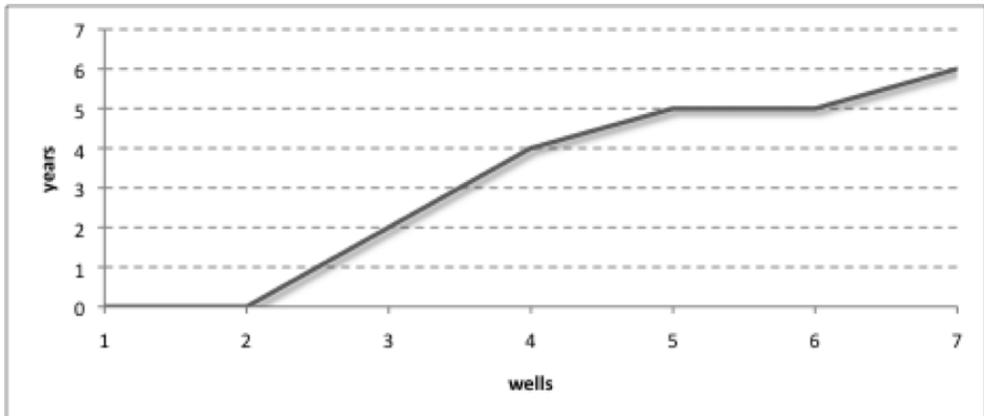
Source: self made.

Table 3 shows the table resulting from the number of years on average it takes to start building the various wells, their standard deviation and the interval formed by the average value plus / minus twice their standard deviation (which groups 95% of cases). The table is the result of simulating the process a hundred times. In figure 6 the result is shown in graphic form.

Table. 3. Number of years on average that it takes to start building each well and range of said value ±2σ

Wells	Years (avg)	Years (SD)	X+2SD	X-2SD
1	0,0	0,0	0,0	0,0
2	0,0	0,0	0,0	0,0
3	2,1	0,3	2,7	1,5
4	3,4	0,6	4,6	2,1
5	4,4	0,8	6,0	2,7
6	5,2	1,2	7,7	2,8
7	5,9	1,7	9,2	2,5

Source: self made.

Three years after the beginning of the construction of the wells in Yate, five of them have been built, which indicates that the real scenario has been located in the most optimistic part of the area formed by the average value plus / minus twice the standard deviation (3 – 6 years) for that specific well.

Figure. 6. Years on average it takes to start building each well and average value ±2σ.
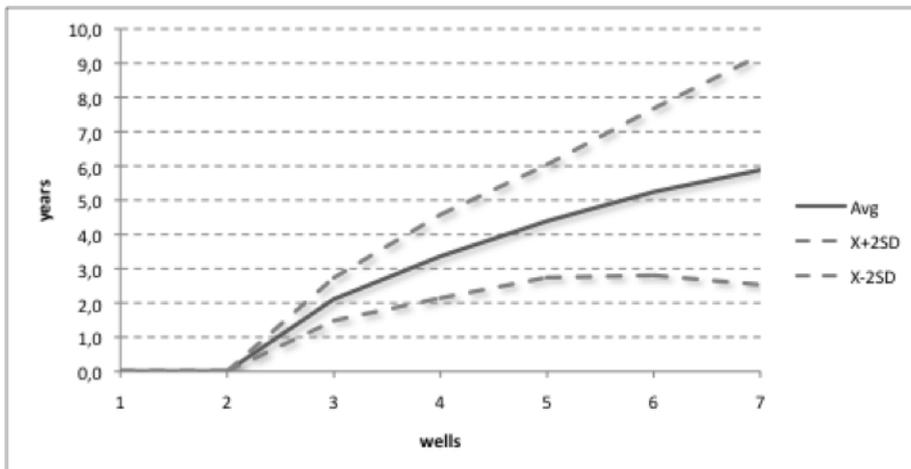
Source: self made.

By this procedure, very little money can generate a great improvement in the living conditions of populations like the one analyzed here. The NGO can donate the cost of the initial asset (two wells in our case) and even recover the money at the end of the project. Once reached full capacity (the seven wells and the 28 orchards that depend of him), the wells are able to generate the initial investment very quickly. In other similar situations, instead of NGOs, an investment fund

could promote the project and obtain a return for the cash flow generated by the sale of a percentage of the harvests. In conclusion, all the parties win: the population has access to water and new sources of food that were previously lacking at zero cost and investors obtain their revenues by monetarizing part of the new harvest.

It is important to note that thanks to this way of financing the construction of the well, it is not necessary to subsidize it. It is self-financed through the orchard that the well itself makes possible. In addition, all the harvest that remains after paying the well represents an improvement in the quality of life of the families that manage the orchard. And they still have the usual harvest of teff.

The impact that the construction of the wells can cause on the inhabitants can be seen through the following causal diagram that collects the different variables involved in the project and connects them with arrows (figure 7). If the number of wells increases, it is obvious that the water available increases. This increase in water, in turn, results in two issues: it increases people´s health and on the other hand increases the number of vegetable gardens. By having more water, you have more possibility of watering and therefore more gardens. This increase in the number of vegetable gardens increases the production of vegetables, which, in turn, implies two other things: better food and therefore better health and, on the other hand, a greater saving. In addition to having teff as a savings mechanism, now the families involved in the project will have vegetables that they can sell in the market.

That money has two destinations: one is the financing of the well and the other generates a stock of capital that is the real savings. This savings can be devoted fundamentally to three things: food, health (doctors, medicines ...) and education. Better food means better health. Health and education are related in both senses because to better health, more possibilities to study and because, in the medium / long term, an improvement in education will result in better hygienic habits that, in turn, will have an impact on health.

Figure. 7 Causal diagram of the development generated by the construction of the wells.
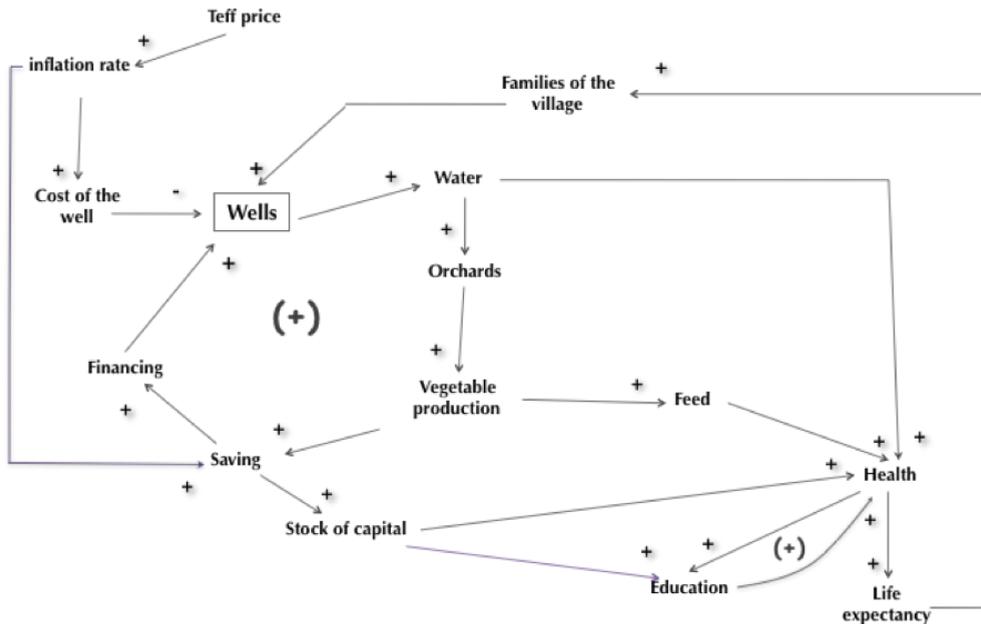
Source: self made based on (Garayalde, 2014; 160).

Therefore, wells are paid with the production of vegetables. As wells are paid, there is more capacity to build new wells; more wells means more water; more water means more orchards; more orchards means more savings and financing capacity; more financing capacity allows to build more wells.

A positive loop (+) is generated; an infinite growth loop that will be limited by the number of families in the village. Once all the families have access to a well and, therefore, have their orchard, there is no longer any need to make new wells. The number of families is the limit of the number of wells. But the number of families is not static because, to this variable, an arrow comes from the variable "life expectancy" that could imply the increase in the number of families (and the future need for more wells). But that impact is not immediate; It is a long-term impact.

The other variable that could limit the project is the cost of the well, which, in turn, is affected by inflation. Inflation will mean an increase in the cost of materials and labor needed for the construction of the well. This limitation, however, is counteracted to the extent that inflation, in turn, will increase the price of vegetables and will positively affect the savings and financing capacity of the wells.

5. Conclusion

The conclusion that can be drawn from this work is that the use of a Project Finance technique can encourage the development of an economically depressed area without their beneficiaries having to risk their own money. The project itself is in charge of self-financing. This also allows the work of NGOs to focus on other aspects rather than financial ones and even attract private capital to promote this development in exchange for obtaining a return on products that can be monetized. Through the use of this technique in certain development projects, the focus is on the management of the social aspects derived and not so much on its financing because it is mostly provided by the project itself.

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