Incentivising Funding to the Right Projects

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#### Audience

The document is aimed at both technical and business readers and introduces some primitives for understanding and implementing holistic project valuation

## Introduction

Impact project financing is a complex and onerous process. While there are many factors at play in determining how funding is allocated, it is mainly driven by a return on investment (ROI) model. Funders choose projects that will provide the biggest returns at the lowest risk. The problem with this approach is that funding is not necessarily directed at projects that generate the most important impacts to society and the environment.

## The Problem Statement

Typically, at a high level, Smart Impact Bonds are structured by looking at three factors namely; the costs of running a project, the risk that the project will succeed, the return on the investment for funding the project. The problem with this approach is there is no consideration taken into account on the importance of the project from an impact perspective and as a result funding is often directed at projects that have high financial returns and not high impact returns. Given that decisions on project choice are purely financial, how do you quantify the value of the impacts a project generates in monetary terms. This is even more difficult in that the true impact of a project might only be know years after a project has completed.

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## The Solution

During the due diligence process that funders typically perform, a project is “scored” based on factors such as return on investment, risk of completion, project duration etc. Projects with a high score are chosen for funding. Let’s introduce two factors namely:

*ROIs* = score based on return on investment taking all factors into account

*PVs* = score that a project will be chosen taking all factors into account

*ROIs* = *PVs*

The above equation shows the current calculation that does not take into account any value related to the importance of the impact generated. So let us introduce another term, the Impact on Investment (IOI).

*IOIs* = the score of the impact generated on the investment.

Our formula now looks like

*ROIs* + *IOIs* = *PVs*

So how do we calculate *IOIs* and if funders are looking a a purely financial value how is this converted to a monetary equivalent and who funds this value.

## Our Solution

Calculating *IOIs* is not an easy task particularly since the impact might only materialise after a number of years. The *IOIs* will also vary sometimes rapidly due to a change in circumstances such as a crisis situation. Imagine there is a project to provide aid in Guatemala and the project’s *IOIs* is calculated. Now a hurricane hits the area with devastating effect. The *IOIs* would suddenly increase rapidly as the importance of aid to this are suddenly becomes a priority. So how can something like this be calculated. One approach is a speculative approach where an opinion is taken as to the value of *IOIs* and the other approach is to use past data to calculate the impact return using machine learning techniques. Using a combination of both these approaches might however be the best solution.

### Speculative Approach

In taking a speculative approach, it is important to ensure that there is a large group of people with knowledge making this speculation it is also important to weed out the people that are trying to manipulate the value. One way to do this is to allow communities to do some form of voting to decide on project value to this community.

One approach to perform this voting is to use [Token Curated Registries](https://docs.google.com/document/d/1BWWC__-Kmso9b7yCI_R7ysoGFIT9D_sfjH3axQsmB6E/edit?usp=sharing), which is a blockchain based primitive for curating lists of items into a priority by incentivising correct ordering and penalising bad ordering and bad items being present on the list. It can be used effectively to speculate on a the impact value of a project.

### Token Curated Registry

A Token Curated Registry works in the following way. A list is created and a fixed number of crypto tokens called LIST tokens are created to back the list. If somebody wants to add a project to the list, they buy some tokens and stake these tokens against their project and request to join the list. The members of the list do some due diligence on the project to decide whether to include this project onto the list or not. It is in the best interests of the list members to only include the valid projects onto the list as this increases the value of the list. If the project passed the due diligence, it is added to the list, otherwise the project is rejected and the project owner loses their staked tokens. This disincentives people from trying to include bad projects onto the list. List members do not reject good projects as this will devalue the reputation of the list.

The more tokens that are staked against a project the higher up the list it moves. This allows a community to “vote” to move projects up or down the list.

If a project on the list is however is discovered to be bad or the project owners are seen to be trying to manipulate its importance on the list, somebody may challenge for its removal by staking tokens against their challenge and once again quorum of list members do due diligence on the project. If the challenge is successful the project is removed and the staked tokens on the project are split between the quorum of list members involved in deciding the outcome of the challenge. If it fails the challenger loses their staked tokens and these are split between quorum of members.

Token curated registries use game theory and incentives to moderate the list and ensure its integrity.

This is just one way to speculate on the future value of a project by include the community in “voting” ona project impact value.

### Past Data Approach

Using past data to evaluate a project’s impact is much more accurate, but there are a few problems with this approach. The biggest problem is lack of accurate data and in order to build out a model to make this assessment large amounts of data are required. How can we gather accurate data. While existing data could be used it is difficult to prove its accuracy nor its providence. Using blockchain in the impact data capturing phase can drastically improve data accuracy. By using a claim and evaluation process where both the claim and the evaluation are cryptographically signed and ledgered onto a public blockchain the information can be cryptographically check for authenticity. This also avoids any double counting and if token technologies are used to incentives good behavior by evaluators the data accuracy can be drastically improved. Data captured on projects can then be made available by storing the project metadata onto a blockchain so that access to the underlying project data can be negotiated.

The second problem with using machine learning on past data to make future speculations is that the future state is different. For instance, if past data is used to accurately determine how to tackle malaria infections and then projects are effective, then it is important favour recent data over older data. If the outcome of a project takes years to measure then lag in accurate recent data becomes problematic. Models can be built to overcome this issue by looking a trends an speculating on future state.

### Benefits

The benefits of adding in the IOIs factor to our equation means that we are score projects based on a more holistic approach so that there holistic value can be used when choosing which projects to fund or not. The IOIs value can be used to rank the most important projects from a purely impact perspective. This can be used to direct philanthropists and donors to add additional funding to the right projects thereby increasing the ROI so that funders will select projects with the highest PVs. Another approach to filling this funding gap is to introduce tokens that are generated based off the IOIs score. Projects with a high score would receive more tokens and these tokens would have some intrinsic value either financial or other.

### Summary

While this paper does not does not solve all the issues in holistically valuing an impact project, it introduces some primities for building an ecosystem where this value could be calculated. The IOI can be calculated, but there will always be a degree of inaccuracy. We should take an approach of improvement and strive to get the value 100% accurate, but even with an accuracy of only 70% it will still be a marked improvement on what we have today.

If we apply this relative basic approach to holistically valuing projects, we can direct future funding much more accurately.