

Measuring Impact: Benchmarking cost-efficiency of investment

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GIF seeks value for money in investing for impact and seeks to rank prospective investments according to impact per dollar to choose the most cost-effective ones. Similarly, to learn from our results, we need to be able to evaluate the outcomes of past investments according to the same metric.

The pursuit of value for money is complicated by GIF's nearly unique ability to invest in both for-profit and non-profit innovations, and to use grants as well as debt, convertible debt, and equity. A grant may offer larger impact than a loan or equity investment of the same amount, but a loan is likely to be repaid, allowing the funds to be reinvested for further impact.

Our methodology is continually refined and improved, which means the case studies and calculations here will continue to be updated, but how impact is assessed, how costs are calculated and how that cost/impact ratio is benchmarked.

Impact measures: risk-adjusted, discounted cumulative impact

As part of its Practical Impact methodology, GIF forecasts the annual flow of impact ten years after investment assuming the innovation scales successful, and then adjusts that forecast by the judged probability that the innovation is successful. This yields the risk-adjusted ten year impact forecast $Y(10)$, expressed in PYI (person-years of income-equivalent.)

In order to cumulate all future impact and place greater weight on impact that occurs sooner rather than later, we must make assumptions on the time-path of impact and on discount rates.

GIF uses a time horizon of ten years because it typically takes that long for an impactful innovation to diffuse to a significant portion of its addressable market. Such innovations will typically continue to expand for some time after that.

For present purposes, we need to impute a long-term time-path of the innovation's impact, based on the snapshot $Y(10)$ (See Figure 1.) and make the following assumptions:

- $Y(t) = Y(10)$ for years $t = 10$ to 20. (The innovation's impact stays constant in the second decade, a more conservative assumption than allowing for expansion).
- $Y(t) = 0$ for $t > 20$. (The innovation is obsolete and has no impact after year 20).
- $Y(t) = 0$ for $t = 0$ to 5; $Y(t) = Y(10) * (t-5) / 5$ for $t = 5$ to 10. (Impact is null during the first five years, and then ramps up linearly to $Y(10)$ over the next 5).
- All impact is discounted back to the present using a discount rate of 10 percent. (This is a conservative, relatively high discount rate compared to most commonly-used social rates of discount. See GIF's Practical Impact methodology document for a justification of this rate.)

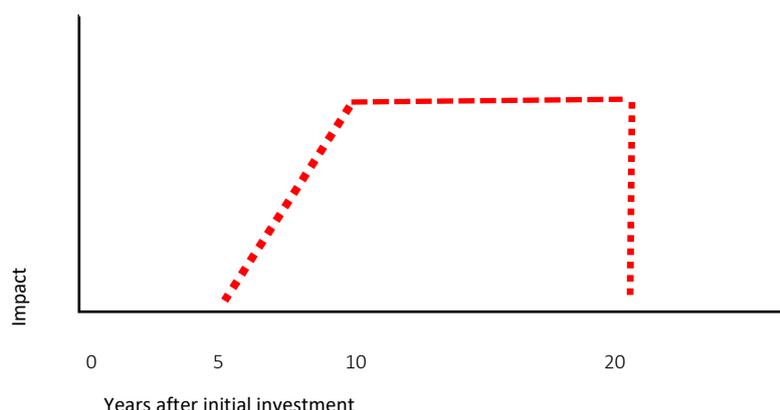


Figure 1 Time path of impact

Where GIF has co-invested with another funder, GIF is attributed a share of total impact proportional to GIF's share of funding. However, no impact is allocated to funders who contribute before GIF's entry or after GIF's exit.

Cost of investment

Grants

For grants, the cost is the amount of the grant.

Risk capital

Risk capital includes debt, convertible debt, and equity. The starting point for computing the cost of a risk capital investment is the multiple of invested capital:

$$\text{MOIC} = \text{current financial valuation} / \text{total investment amount.}$$

For new investments, MOIC is set equal to 1. Where there is a subsequent financing round, the new valuation may be applied. In the absence of a financing round, we use judgment in determining the holding value of the investment. For *debt investments*, the value is the amount of the loan plus interest accrued and paid back to date. An adjustment is made if there is a significant chance of default.

The MOIC is not adjusted for the time between initial investment and current valuation and so is not, strictly speaking, a return measure.

- To impute a cost to the investment, GIF uses, for the purpose of this exercise, a hypothetical cost of capital r . (Note that GIF does not have an established cost of capital; we perform sensitivity tests on r .) We assume that an investment of $\$X$ will be held for T years. Then the cost of the investment is:

$$\text{Cost} = rXT + (1 - \text{MOIC})X$$

The first term, r_{XT} , is the opportunity cost of tying up the capital.

Where $MOIC < 1$, $(1-MOIC)X$ is the currently anticipated loss of capital, and this counts as a cost.

Where $MOIC > 1$, there is a profit, and this reduces the cost.

Ex ante, all investments will have a positive cost. Note that *ex post*, the cost of an individual investment could be negative if $MOIC$ is significantly greater than 1. For this reason it is preferable to calculate $\$/PYI$ for comparing individual deals. At the portfolio level it is possible to aggregate to an overall $PYI/\$$ figure.

Benchmarking impact efficiency

We express investment efficiency in terms of the cost per unit of impact in $\$/PYI$:

$$\text{cost of investment/expected impact}$$

The lower this ratio, the most impact can be achieved with the resources at hand.

To assess the efficiency of a GIF investment, a benchmark is to compare the investment's social benefits with the benefit that would result from a direct cash transfer with the same cost. This benchmark is facilitated by the definition of a PYI : it is the increase in well-being if a person received, on a one-time basis, additional income equivalent to 100 percent of their annual consumption. By asking how much does it cost to 'buy' a PYI via a cash transfer, we can create a benchmark against which a GIF investment (or the portfolio) can be compared.

PYI is a relative measure: it is expressed relative to the current consumption level and therefore the cost of 'buying' a PYI depends on the recipient's consumption level. If we assume a recipient living at \$5 per day at purchasing power parity (PPP), and a market dollar per \$PPP exchange rate of 0.4, then it would cost \$730 to obtain a PYI via cash transfer.

Future directions for refinement

The tool attributes all future impact gains to GIF and its contemporaneous co-investors, on an argument that the current investment is catalytic or essential for all future impact. A tool under development looks in more depth at the increment in future impact due to GIF's current involvement.