

Global Innovation Fund- Social Rate of Return

Revised June 22, 2023

I. Summary

The Global Innovation Fund is among a small group of funders that invest in early-stage innovations that benefit poor people in developing countries, with the intention of catalysing their growth to impact at scale. With seven years of investment experience which are now yielding ground results, we attempt to assess social returns of our portfolio. Following Kremer *et al.* (2021), we set a lower bound on these returns by comparing the impact of the fastest maturing innovations to the costs of the entire portfolio. If the sum of the net social returns of a small portfolio, exceeds the sum of the stream of GIF costs, then we know that this represents a floor on the overall social rate of return on the organization. For our analysis, we consider a few of GIF's fastest growing innovations, out of our early investment portfolio of 38 innovations between 2015 and 2018. We select five innovations – Educational Initiatives, One Acre Fund, Pagatech, LivelyMinds and Development Media International.

We estimate that between 2015 and 2022, the five investments have created over \$1.68 billion of social benefits, net of operational costs, out of which GIF's attributable net social benefits are \$582 million. We then compare the benefits from these five against the costs of all 38 innovations in GIF's early portfolio, together with all of GIF's operational costs through 2022 to execute these investments. After seven years, these five innovations alone have yielded benefits that exceed GIF's total costs for early innovations, returning \$5 in net social benefits attributed to GIF for every dollar invested by GIF, using a 7% discount rate. This corresponds to an internal social rate of return of 199%.

II. Procedure

Social benefit calculations

There are three components to the calculation of returns.

Innovation benefit flows:

We first estimate the annual net social benefits for the five innovations from the time of GIF investment through 2022. Different innovations estimate the value of social benefits differently based on their impact outcomes. For example, for our investment in Development Media International (DMI), which is a radio messaging intervention to increase family planning uptake, we estimate the number of maternal deaths averted as benefits. We calculate social benefits from country-specific value of statistical life (VSL) estimates. This gives us the gross benefit. We then subtract the cost of delivering modern contraception to additional users to yield net social benefits. DMI achieved total net social benefits of \$526 million. One Acre Fund, another innovation, creates benefits to smallholder farmers through providing extension services, inputs, and credit. One Acre's internal monitoring system can track the impact of these services on farmer profits. Farmers directly benefiting from 1AF, get a benefit of \$74 per farmer and those indirectly benefiting get a benefit of \$24.50. 1AF achieved total net social benefits of \$710 million.

For this calculation, we include all benefits, including to people outside GIF's target population (those living on less than \$5PPP (2011) per day). That differs from our accounting of benefits in PYI (person-years of income-equivalent), which is restricted to poor people. On the other hand, the PYI reckoning includes benefits in women's agency and safety, for which monetization is

difficult. This is true in particular for DMI, where the bulk of benefits in the PYI metric are not monetized and included here.

Innovation benefit attribution:

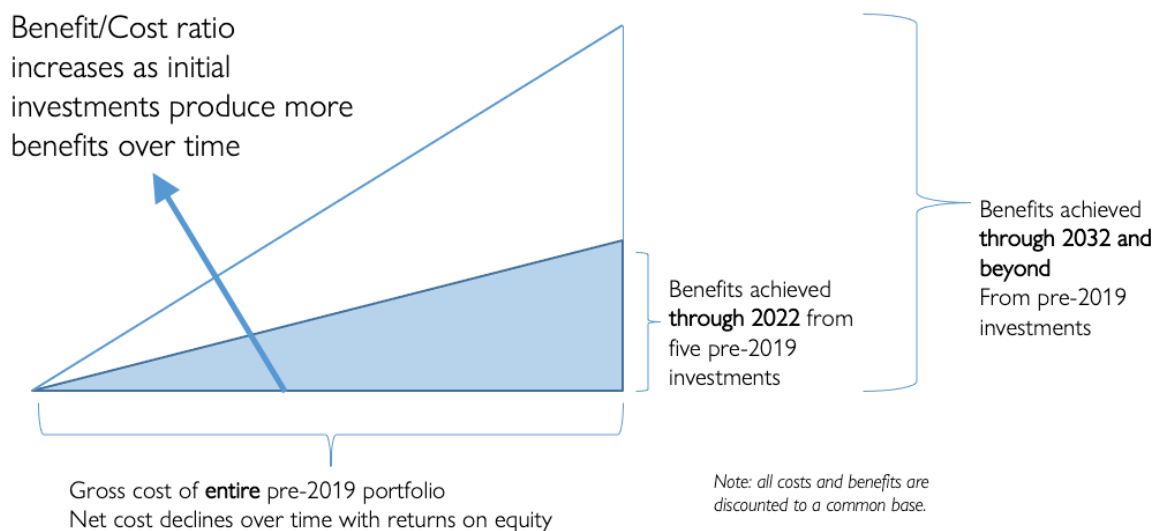
For GIF to assess its social return and impact, we calculate how much of the total net achieved benefits can be attributable to GIF. This is a difficult undertaking. There is no unique, correct way to allocate credit. An attribution method depends both on hard-to-verify additionality assumptions and value judgments on who deserves impact credit. Previously we have used the procedure of Kremer et al (2021), which seeks to identify the ‘innovation costs’ –i.e. the costs of the central research and development that underpin the innovation – and attribute all the benefits to the funders of those costs. Two methods were used in the current note. The first is in the spirit of Kremer et al, and identifies the innovation costs and distinguish them from other (“operational”) costs. Impact credit is allocated based to GIF based on its share of those costs. The second is used when the distinction between ‘innovation costs’ and ‘operational costs’ is unclear, but where it is plausible that GIF and its contemporaneous co-funders were critical to the survival and growth of the innovation. Absent that funding, the innovation would have failed or foundered. Again impact credit is allocated to GIF in proportion to its share of the funding round.

Innovation benefit/cost ratio

The Benefit-Cost Ratio (BCR) provides a single metric showing how an investment’s social benefits compare to its costs. We calculate a BCR for each of GIF’s selected five innovations. The calculation only includes GIF’s attributable social benefits, hence the interpretation per innovation is the benefit credited to GIF per GIF \$ spent. The BCR is the ratio of the discounted value of the stream of benefits generated by an innovation (attributed to GIF) to the discounted value of GIF cost contribution for that innovation. We have used a 7% discount rate. Discounting allows for all present and future costs and benefits to be expressed in a common metric.

Why this is a lower bound estimate of the benefit/cost ratio

The denominator includes *all* costs for the pre 2019 portfolio that includes not only these fast-maturing investments, but many others. As some of those investment reach fruition – and as these five continue to bear fruit – the total benefits from those initial costs will increase. Therefore the benefit/cost ratio – the slope of the line in the diagram below – can only increase over time.



GIF portfolio level calculations

GIF net benefits flows

The total net social benefits for the sub-set of five innovations is \$1.68 billion. The portion of this directly attributable to GIF is \$582 million. Because this excludes expected future benefits from these five innovations, let alone GIF's other 56 innovations, it is a lower bound estimate of social benefits achieved from GIF's portfolio investments.

GIF Benefit cost ratio

The portfolio-level benefit-cost ratio of GIF's portfolio is the sum of benefits GIF attributable share of each innovation in the portfolio divided by the total cost of the portfolio. Total cost of the portfolio includes the present value of disbursed funds through 2022 for *all* the 38 innovations supported between 2015 to 2018. Cost also includes the administrative costs to deliver these investments. The nominal value of GIF's total cost of the portfolio was \$99 million. The ratio of discounted net benefits from the five innovations to discounted investment and operational spending for the 38 innovations yields a lower bound on the portfolio-level benefit-cost ratio of 5. In other words, GIF's early portfolio has returned \$5 in attributable net social value for every dollar invested by GIF.

GIF Social rate of return

The internal social rate of return (SROR) for GIF's early portfolio is the rate that equalizes the discounted value of the benefits generated by GIF's investment and the discounted value of the portfolio investment costs. This provides a lower bound estimate on the social return on investment using data on the realized returns to a subset of the investment portfolio up to any given date. The BCR of 5 corresponds to a social rate of return of 199 percent.

Benefits by innovation

Innovation	Total Nominal Net Benefits (through 2022) \$ millions	GIF Attributed Nominal Net Benefits (through 2022) \$ millions	Benefit Cost Ratio (through 2022)
One Acre Fund	\$ 710	\$ 71	4
DMI	\$ 526	\$ 343	128
Paga	\$ 157	\$ 61	3*
Educational Initiatives	\$ 188	\$ 47	19
Lively Minds	\$ 99	\$ 61	13
Total	\$ 1,681	\$ 582	5

**Based on outflows only, doesn't incorporate investment returns.*

Additional Notes:

Benefit calculations are conservative for the following reasons.

Attributed benefits for One Acre Fund are based on an accounting of specific innovation components funded by GIF. This understates the catalytic impact of GIF's support, which One Acre credits with spurring other funders' contributions as well as One Acre's growth in coverage.

The benefits of DMI are based on value of statistical (VSL) for reduced maternal mortality. However, the program was shown to have benefits in women's agency and self-reported well-being. Those benefits are included in PYI calculation of benefits but not in the monetized benefits in the table.

Educational Initiatives and Lively Minds create benefits for children that we believe will persist for decades. These are discounted at 7%. Many benefit-cost analysts prefer a lower discount rate, which would make a substantial difference in these cases.

Paga's costs are gross investment costs, making the benefit/cost ratio a conservative one. In the event of a sale of equity, the returns would be netted out, resulting in a higher benefit/cost ratio. There would be a possibility of a negative cost if returns were sufficiently high.