

Full Length Research Paper

Development impact bonds to overcome investors-services providers' agency problems: Insights from a case study analysis

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Received 9 May, 2019; Accepted 20 June, 2019

The paper aims to enrich the academic debate on social impact investing, through a formalization of Development Impact Bonds (DIBs)' structure. With this purpose, the research adopts an inductive approach and presents a case study analysis of the world's first successful DIB in education, Educate Girls Development Impact Bond. The analysis fosters the role of DIBs as tools to provide funds to non-profit organizations operating in developing countries, by reducing agency problems between investors and social services providers, and by mitigating goal displacement effects.

Key words: Development impact bonds, social impact investing, outcome-based contracts, payment-by-results, social finance, pay-for-success, agency problems, non-profit organization.

INTRODUCTION

In the last decade, since the 2008 to 2009 world economic and financial crisis, governments have been often struggling to make sure social services provision. Indeed, when budgetary constraints become pressing, nations opt for austerity policies (Vis et al., 2011) even at the expense of the welfare state. In such a situation, the nonprofit organizations (NPOs) are the only ones able to substitute governments in delivering social services (Joy and Shields, 2013). NPOs are formal, private, self-governing and voluntary organizations that can generate revenues (Froelich, 1999) but not distribute net earnings to those in control (Hansmann, 1980; Salamon and Anheier, 1992). Through their work, governments may reduce public expenses while exploit NPOs' abilities on a

specific social issue (Gazley and Brudney, 2007; Pfeffer and Salancik, 2003) and retain political consensus at the same time (Luksetich, 2007). However, NPOs suffer from a scarcity of funds, especially in developing countries, and need to attract grants or donations from individuals and corporations. Private capital has its benefits. It enhances resilience during economic shocks more than state funds and commercial revenues (Hodge and Piccolo, 2005). Furthermore, for their part, private corporations need to enhance their social role and, by sustaining non-profit organizations, may take reputational advantages. Therefore, in the last years, NPOs and businesses are converging (Weisbrod, 1998; Austin et al., 2007; Backman and Smith, 2000; Frumkin, 2005).

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For profit firms seek to reduce their portfolio risk and to maximize their returns. Likewise, NPOs seek to lessen financial risk and boost revenue streams (Kingma, 1993). However, private investors require guarantees and control to avoid the emergence of possible agency problems (Jensen and Meckling, 1976; Eisenhardt 1989a; Shapiro, 2005). Hence, to acquire investors' trust and get private donations, NPOs must formalize their processes (Lipsky and Smith, 1989) and improve accountability. Put it differently, they need for new financial tools in order to collect private capital to employ for the social services provision and to satisfy investors' expectations.

Social finance (Geobey and Weber, 2013; Moore et al., 2012; Weber, 2012) investigates how innovative and traditional financial instruments can direct funds into social projects, shifting from an economic-centered vision to a societal-centered one (Porter and Kramer, 2011). Specifically, Social Impact Investing (SII), as a branch of social finance, studies how to generate revenues besides social outcomes (Bugg-Levine and Emerson, 2011; Geobey et al., 2013). Although definitional and legislative issues still affect SII (Agrawal and Hockerts, 2019; Brandstetter and Lehner, 2015), its tools represent an emerging asset class (Agrawal and Hockerts, 2019; Höchstädter and Scheck, 2015). It includes private equity and direct lending, with returns ranging from zero to market rate. Both nonprofits and businesses alike may exploit potentialities of impact investing to get capital otherwise disregarded by traditional financial markets and institutions (Mendell and Barbosa, 2013). Among other impact investing tools, Pay-for-success (PFS) may represent up a legitimate extension of NPO managers' financing toolbox, because they provide funds to NPOs while fostering social innovation and preserving governments' budgetary constraints (Azemati et al., 2013). In PFS contracts, service providers must meet agreed upon payment thresholds to trigger payments. These forms of public-private partnerships may offer several benefits. A peculiar form of PFS contracts for delivering public services in low-and middle-income countries are Development Impact Bonds (DIBs). DIBs can bring together multiple actors to tackle relevant societal issues (Carmody et al., 2011; Development Impact Bond Working Group, 2013). However, despite their potential application and the interest by practitioners in this financial tool, the academic literature is scarce. Specifically, has been no detailed investigation on whether DIBs may make up a viable tool for NPO managers to get private funds and for private investors to invest their money while making a difference (Bugg-Levine and Emerson, 2011). Previous studies on DIBs have not dealt with the financial features of the contracts and with the issues of agency costs (Jensen and Meckling, 1976) and goal displacement effects (Froelich, 1999). The primary aim of this study was to investigate how DIBs may encourage private investors and non-

profits to tackle riskier interventions, thus bridging institutional gaps. In addition, we set the study to investigate whether DIBs may reduce the agency costs and the goal displacement effects likely to arise in PFS contracts. This case study also seeks to illustrate the Educate Girls DIB to depict its weaknesses and strengths, thus allowing a more informed discussion about the key elements of a successful DIB.

Therefore, to enrich the debate on DIBs and to move towards a formalization of a DIB's structure, this paper adopts an inductive approach (Eisenhardt, 1989b) and presents a case study analysis (Yin, 2014) of the world's first successful DIB in education, Educate Girls (EG) Development Impact Bond. Even though the analysis of a single case makes it difficult to generalize the results, it may represent a first attempt of formalizing a DIB's structure through an in-depth analysis of a best practice. We point out that "Educate Girls DIB" has already been object of two previous studies (Joynes, 2019; Loraque, 2018), that however overlooked the financial features of the project and did not describe the DIB's accountability mechanisms. Differently, our work grounds on this case study by adopting a financial point of view and thus focusing on the DIB as tool to provide funds to NPOs operating in developing countries, by reducing possible agency problems.

The remaining part of the paper is structured subsequently. The second section presents a review of studies by practitioners and academics on DIBs. There's often a lack of clarity in academic studies and practitioners' reports on what DIBs are and on how they work. The literature review that follows will consider the most recent publications on the subject to give an accurate depiction of DIB's structure, functioning and field of application. We'll also discuss in detail the role of every single actor in a DIB contract and the main financial flows characterizing such an investment vehicle. The third section illustrates and motivates the methodological choices. Then, the case study is analyzed and discussed. Finally, concluding remarks are provided.

Development impact bonds: A review of academic studies and "grey literature"

DIBs, as other forms of outcome-based contracts (OBCs), are attracting the attention from scholars and practitioners. Recent non-academic publications offer useful insights on DIBs. Among them, noteworthy are those of the Center for Global Development, which made up a working group on DIBs (Development Impact Bond Working Group, 2013). They first suggest creating investment funds and outcome funds. They should speed up capital accumulation and capital delivery procedures. To diffuse learnings from successful implementations, experts should set up an international team of DIB experts. They should propose shared reporting standards

and evaluation guidelines for pre-intervention and post-phase intervention phases. Apart from the ones mentioned, other questions arise (Clarke et al., 2019). Experts and scholars should clarify if DIBs were the best use of money for that context. In addition, is the intervention implementation dependent upon DIBs usage? Recent publications contain cross-country comparisons of DIBs health interventions. The authors summarize DIBs key information, design and outcomes of three projects launched in five developing countries. These are the Cameroon Cataract Development Impact Loan and the Utkrisht Impact Bond (known as “Rajasthan DIB”) (Clarke et al., 2019). The results show that DIB stakeholders took part in one DIB at a time. Replicate or scale proven approaches to health services provision is the favored course of action.

For what concerns academic literature on the DIBs, we found little published information. Atun et al. (2016) identified workable funding tools to tackle HIV in sub-Saharan Africa. Suitable tools may be remittances, diaspora bonds, social and development impact bonds, sovereign wealth funds, and guarantees. Welburn et al. (2016), argued that DIBs cash flow profile mirrored the efforts necessary to interrupt disease transmission. DIB capital delivered in bullet form can support first phase expenditures. Then, less costly treatments on patients will reduce long-term cash needs. The preponderance of DIBs in health is for several reasons. First, empirical data to use for evaluation are available. Second, complex health problems need the skills of multiple stakeholders (Oroxom et al., 2018; Welburn et al., 2017). Worth mentioning is the study of Anyiam et al. (2017), who attempted to outline the cash flow profile of a health DIB. Belt et al. (2017) described targets, pricing, outcome and results of one of the world’s first DIB in agriculture: the Asháninka DIB. The project achieved its outcomes only in part: because of its small scale, overheads affected project efficacy. Finally, recent studies offer insights on the “Educate Girls DIB” (Joynes, 2019; Loraque, 2018). Even if useful to describe the DIB’s main features, they suffer from several limitations. They overlook the financial features of the project and do not describe the DIB’s accountability mechanisms. In addition, they do not discuss the context surrounding the DIB implementation.

Stemming from the grey and academic literature, we can summarize that DIBs are multilateral contracts offering to contractual parties a shared investment platform and metrics for evaluation (Development Impact Bond Working Group, 2013). DIBs aim to foster cooperative behaviors to confront relevant social challenges in emerging countries. Once players have agreed on a formal contract with the help of an intermediary, investors offer the capital to begin the service provision. Service providers are those in charge of service delivery to target beneficiaries and use private funds to drive impact. When the service provision ends, a third-party outcome evaluator judges the results of the

service provision based on the agreed on quantitative outcome measures. If the technical evaluation is positive, the outcome funder repays investors of their principal plus an added financial return on investment for the risk borne.

There are two financial flows in a DIB intervention. The first is capital commitment. That’s a negative financial flow for the investor and a positive one for the service provider. The second is the upfront capital commitment reimbursement is a negative financial flow for the outcome funder and a positive one for the investor. Such a financial flow includes the capital commitment plus added revenues for the risk borne. Service provision and technical reporting are non-financial flows, but service and information streams.

Let us now consider the role of every single actor in a DIB contract. Investors are development partners, development finance institutions, philanthropic organizations, private investors, or traditional donor agencies. They want to use their capital and to gain financial returns, besides making an impact (Jun et al., 2018). Service providers are public agencies, private companies, or nonprofits. Contrary to investors, their main concern is drive change and scale impact in local communities. Outcome evaluators are social consulting firms who want to make sure that the service provision has delivered its results. Outcome funders are development agencies or charitable foundations who complement or substitute government payments to investors (Atun et al., 2016).

Before repayment occurs, the outcome evaluator should confirm that service providers have achieved the agreed-on outcome metrics. Intermediaries are consulting or law firms. They make sure that the contract signed fits the needs of investors, service providers and outcome funders. Figure 1 outlines a basic DIB structure.

On market incentives, DIBs may make sure three main results (Development Impact Bond Working Group, 2013). First, DIBs attract private funds into social interventions by making them more appealing to investors. Second, they push players to carry out a client-based bottom-up approach and of feedback mechanisms, data collection procedures and performance management systems (Oroxom et al., 2018). Third, they promote service provisions that governments and local agencies overlook in regular conditions.

MATERIALS AND METHODS

The case study methodology

Several scholars have adopted the case study methodology to examine the impact of investments in developed and developing countries. Among others, Kish and Fairbairn (2017), when they explored how the moral performance of investors affects impact projects in Africa, Verrinder et al. (2018), when they investigated three African interventions by adopting the Theory of Change (ToC) framework, Bhatt and Ahmad (2017), when they researched how

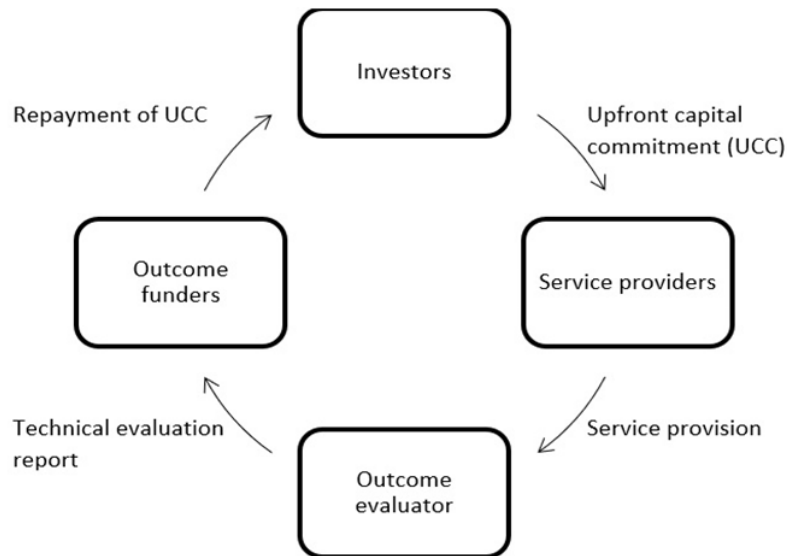


Figure 1. Basic DIB structure.
Source: Study elaboration.

India's venture capitalists adopted re-conceptualized venture financing for the Indian social context. Agrawal (2018) also used a comparative case study to describe how impact investors work in India. Tackled issues were education, finance, health, sustainable development and employment. They affected India's poorest economic strata. Rääkkönen et al. (2016) proposed an evaluation framework for impact investments by drawing on two case studies. A detailed analysis of impact investors' behavior is that of Jones and Turner (2014). The authors described the 60 years investment experience of the Mennonite Economic Development Associates (MEDA) group. La Torre et al. (2019) analyzed how cross-sector collaborations in social impact bonds (SIBs) vary according to sectors and geography. Guarini et al. (2018) relied on a case study to propose a multi-criteria assessment of impact in real estate.

Qualitative methods allow scholars to characterize individuals, groups and social phenomena. To examine events within their context while keeping a real-world perspective, case studies are a practical choice (Yin, 2014). Furthermore, it is possible to build theories through case studies (Eisenhardt, 1989b). Case studies permit using different data sources to investigate the unit of analysis (Baxter and Jack, 2008). To select cases, researchers should seek the ones that enable the greatest learnings in the shortest time (Tellis, 1997). In addition, researchers should not influence the phenomenon (Yin, 2014). Such a research method has drawbacks: it is difficult to generalize results from a single case.

The three main approaches to case study research that Brown (2008) recently placed on a qualitative-quantitative continuum are the post-positivist, the pragmatic constructivist and the relativist. The "post-positivist" case study method conceptualized by Yin (2014) aims at keeping a realist perspective on the phenomenon of interest while preserving objectivity (Mills et al., 2017). The goal of post-positivists is to understand reality despite all the methodological issues that may arise during field research. Even if procedures like the triangulation of methods and documentation and the adoption of rigor data collection protocols, researchers know that their world view, because it is subjective, might also be affected by cognitive biases. For such a reason, Yin (2014) suggests, when possible, to seek rival explanations for the same

phenomenon, to test the replicability of the research design into different settings and to minimize the level of subjectivity by reducing to a minimum the interaction with research subjects. For pragmatic constructivists like Merriam and Tisdell (2015), case study research using qualitative methods should place greater attention on developing inductive reasoning and on forming a rational evaluation of a phenomenon rather than on testing pre-defined hypotheses. For relativists like Stake (1995), the data collection methods to be preferred by researchers are interviews and observations. Situation shapes activity, experience, and one's interpretation of the case, and so the production of useful knowledge is viable only when social scientists can perform their critical and interpretative role.

The first step in case study research is verifying whether the method suits the phenomenon to investigate and thus identifying a suitable case (Miles and Huberman, 2009). Accordingly, the unit of analysis used is determined by selecting a DIB among those listed by Gustafsson-Wright et al. (2017) based on its likelihood to extend current knowledge (Pettigrew, 1990). As Educate Girls DIB, launched in 2015 to 2018 by the NPO Educate Girls in India, is the first successful DIB with enough available information, we chose it (Creswell and Creswell, 2017; Stake, 1995). Figure 2 summarizes the case study selection.

Second, an exploratory, holistic single case study is opted for. That is, because the DIB had not a single set of outcomes (Yin, 2014). Despite that, the lack of information on completed DIBs (Figure 1) didn't allow us to set out a multiple-case study. Third, the need for any proposition to guide our analysis was questioned. This is a common issue for exploratory case studies, since scientific literature is often lacking (Baxter and Jack, 2008). Fourth, we collected data to conduct our analysis. A note of caution is due here since we could not use multiple sources of data (Patton, 1990; Yin, 2014). Disclosure of detailed DIBs information is at stake, since it is up to the player's discretion. Despite such limitations, our analysis examined reports and publications from different origins. The core of our case is the technical report of the DIB's independent outcome evaluator (Kitzmüller et al., 2018). We retrieved only those documents containing financial and managerial

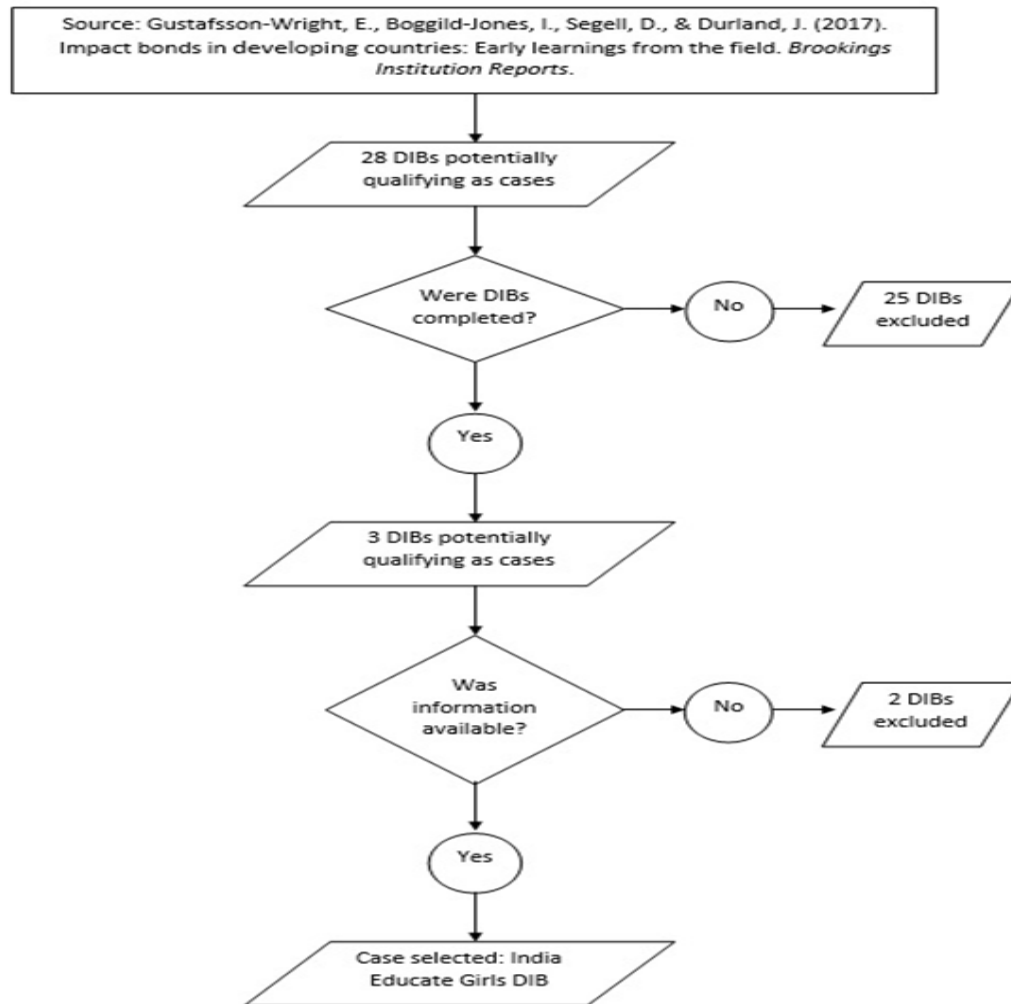


Figure 2. Sampling procedure.
Source: Study elaboration.

information for the timeframe 2015 to 2018. Based on such a choice criterion, we excluded seven documents. Figure 3 summarizes the documentation collection procedure.

Last, we organized the collected information into three categories: DIB structure, DIB key information, and DIB outcomes. DIB structure comprised four actors: investor, service provider, outcome evaluator and outcome funder. For each of them, we displayed the proper name and the typology (Gustafsson-Wright et al., 2017). DIB key information comprised five sub-categories: location, focus, upfront capital commitment, outcome funding and internal rate of return (IRR). DIB outcomes comprised five sub-categories: outcome, evaluation method, impact indicator, target, and allocated outcome payment.

In the next sub-paragraphs, we provide more details about the Educate Girls case study and illustrate the Educate Girls DIB to depict its weakness and straightness and, thus, discuss about the key elements for a successful DIB.

The educate girls case study

That of education is one of India's most pressing societal issues.

Hidden costs associated with the girls' school leaving are high. Chaaban and Cunningham (2011) estimated that the lifetime cost of early school leaving in India is \$ 1,315 million for primary school and \$ 10,610 million for secondary school. Those amounts account for 0.04% and for 0.34% of India GDP. The lack of formal and vocational education causes unemployment, the root of social exclusion (Agrawal, 2018).

Developing countries experience institutional gaps and lack of services. This is because of politics, corruption and poverty (Heston and Kumar, 2008; Mair et al., 2012). Government retrenchment created opportunities in a variety of sectors (Jalali, 2008). Despite that, the lack of funding still prevents social innovation to scale (Sonne, 2012).

Indian schools did not deliver quality education to marginalized populations. In addition, it did not meet the demands for a skilled workforce of Indian small and medium enterprises (SMEs). Problems as a lack of private education programs and a shortage of skilled teachers contribute to worsening the scenario.

To overcome such challenges, the Indian government needed experienced social enterprises and enough funds to sustain their projects. Worldwide impact investors sought opportunities to invest their capital and so directed their resources towards educational

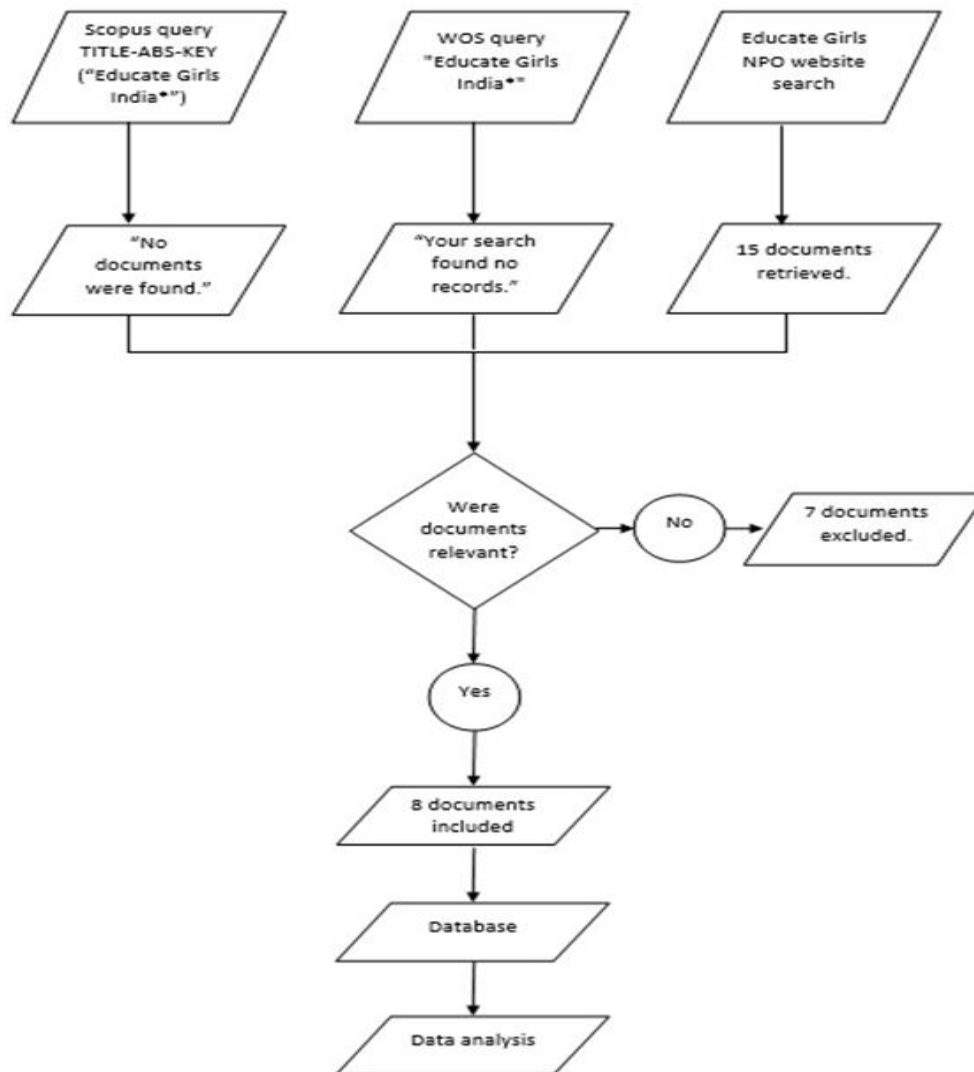


Figure 3. Documentation collection process.
Source: Study elaboration.

projects in India. Investments ranged between 10 and 40% of the equity capital of social firms in the early or growth stage. The smallest sum invested ranged between 10,000 and \$2 million (Agrawal, 2018). Likewise, the NPO Educate Girls attracted the UBS Optimus Foundation into a DIB contract that tackled girls' education in rural areas of India.

The nonprofit organization Educate Girls, confronts gender inequality in India. The NPO helps girls living in rural and marginalized areas of India to resume their studies (Educate Girls, 2018). To fill the institutional gap in education, the nonprofit fostered innovation and leveraged existing public investments.

Its business model is a team-based one. "Team Balika" comprised local volunteers who identified out-of-school girls and motivated them to go back to school (UN Global Compact Network India (UN GCNI, 2018) and Deloitte Touche Tohmatsu Limited, 2018). The profile of a "Team Balika" candidate is that of a village volunteer who passed 12th grade at school. In addition, he or she must have completed a program on enrollment strategies and Creative Learning and Teaching (CLT) techniques. Girls account for 40% of Educate Girls volunteers (Bhabha and Gopi, 2016). School

management committees help the NPO to maximize the girl's school retention.

From 2015 to 2018, the DIB benefitted 7,300 children. Educate Girls treated 166 schools in 140 villages in the Bhilwara district, Rajasthan (Educate Girls, 2018).

Educate girls development impact bond

Let us now consider more in details the DIB contract. The project involved three main actors: Educate Girls (service provider), the Children's Investment Fund Foundation (outcome funder), and the UBS Optimus Foundation (investor). Apart from that, the DIB included the state government of Rajasthan, IDInsight (outcome evaluator) and Instiglio (project manager).

Educate Girls acted as the service provider and implemented the service provision for target beneficiaries. The Children's Investment Fund Foundation, the outcome funder, paid back the investor. The UBS Optimus Foundation, the investor, provided the early capital for the project launch.

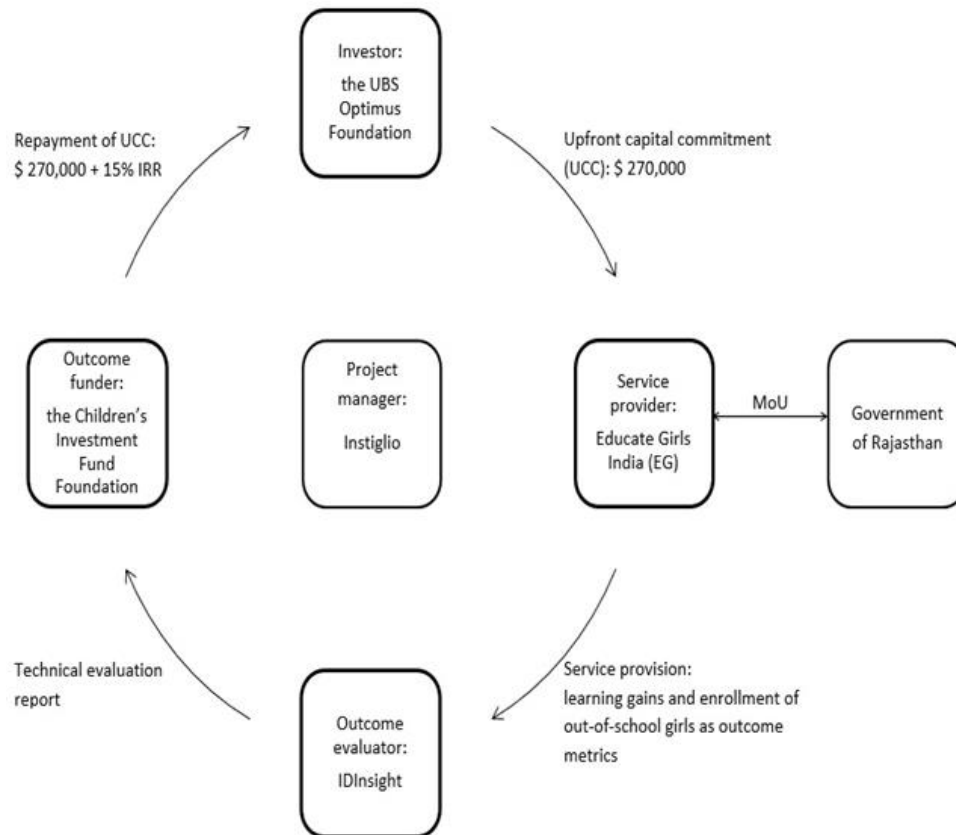


Figure 4. India Educate Girls DIB scheme.
Source: our elaboration.

Educate Girls and the state government of Rajasthan signed a Memorandum of Understanding (MoU). They formed a task force aimed at reducing local opposition and creating a shared vision (Jasmine Social Investments, 2014).

Involved in the DIB contract, were two social consulting firms: IDInsight and Instiglio. IDInsight, the outcome evaluator, analyzed the results of the service provision based on the agreed-on outcome metrics. Instiglio, the intermediary, mediated partner's requests to close the contract.

After some negotiations, it was decided that the outcome metrics would trigger payments from the outcome funder to the investor took an entire year. Then, the "Educate Girls DIB" was ready to start. It costed \$1 million, including legal fees, evaluation and marketing (Assomull et al., 2015). It lasted from 2015 to 2018, and the early capital commitment amounted to \$270,000. The UBS Optimus Foundation disbursed 50% of the principal in 2015 and the remaining 50% in 2016 (Kitzmüller et al., 2018). The Children's Investment Fund Foundation released a single outcome payment to the UBS Optimus Foundation in 2018 (Gustafsson-Wright et al., 2017). Contractual parties selected two outcome metrics to test the service provision. Learning gains accounted for 80% of the final DIB payments. Enrollment of out-of-school girls accounted for 20% of the final DIB payments. IDInsight measured learning gains through randomized controlled trials and enrollment of out-of-school girls through a pre-post comparison.

The DIB does not contemplate payment thresholds. There's no level of outcome to achieve to trigger payments. The DIB links outcome payments to each added unit of outcome achieved

(Gustafsson-Wright et al., 2017). Reimbursement of the principal plus the Internal Rate of Return (IRR) of 15% in 2018 in bullet form occurred in 2018. The investment was 100% unsecured. At the end of the project, the UBS Optimus Foundation got back its principal (\$270,000) plus an added 15% IRR. Educate Girls DIB surpassed both its target outcomes: 160% for learning gains target and 116% for enrollment. Figure 4 also summarizes the financial and non-financial flows of the project.

Significant information is retrievable from third-parties reports. Among them, are those of IG Advisors and of the World Innovation Summit for Education (WISE) and Parthenon-EY. Other sources are the practitioners' publications of the Dasra foundation and of the consulting firm IDInsight. We included Dasra's report despite its publishing date (2014) because it contained useful information for our analysis.

For IG Advisors, the Educate Girls DIB provided impact investing experts with useful insights (IG Advisors, 2017). Above all, partnerships need inputs from both donors and beneficiaries to perform well. Second, different donors give different capital. Strategy-oriented partners will fund strategic interventions, project-oriented partners will offer project-focused funds. Besides that, donors should trust beneficiaries by providing them with long-term, unrestricted funding. By doing so, experienced service providers may have the flexibility to change when circumstances change. Last, donors and beneficiaries can empower each other by filling the respective competencies gaps.

For WISE and Parthenon-EY, one of the success factors of Educate Girls DIB was the role played by the intermediary, in our

case Instiglio. The necessity to ensure accountability made up another success factor. Service providers needed to design data management procedures and to stand against controls of third-parties (Assomull et al., 2015).

For Dasra, the effectiveness of Educate Girls relied on its business model. First, the model is specific to rural schools and is cost effective. Second, the NPO built its business model on measurement. Program results are easy to check, even for third-parties. Last, is scalable and expandable even with similar cost levels. Dasra proposed a framework to map organizational changes of Educate Girls that comprised four phases. "Blueprint" is the first phase. In "Blueprint" the NPO outlined its vision, mission and business model and run a pilot. "Validate" is the second phase. In "Validate" Educate Girls tested its model and refined it or re-worked it. "Prepare" is the third phase. In "Prepare" the NPO developed its organizational capacities and enhanced systems and processes. "Scale" is the last phase. In "Scale" Educate Girls' refined model was ready to reach larger target populations.

The NPO signed contracted the DIB in 2015, during the "Scale" phase (Dasra, 2014). That's interesting for two reasons. DIB implementation needs service providers with proven track records. Their business models should be reliable and validated. DIBs look suitable to help NPOs to scale. They may not adapt to startups and innovative services delivery. Table 1 shows the changes in the cost structure of Educate Girls over the four phases. It maps how organizational structure changes.

The data refer to the timeframe 2005 to 2017. They provide insights on how the NPO reduced its costs while ensuring impact. Annual costs per beneficiary and per school dropped from 2005 to 2007 and from 2008 to 2011. This may be because of changes in data collection methods and in monitored indicators. The shift from activity-based indicators to output-based indicators is significant. In 2012 to 2013, both categories of costs increased. That may be for introducing outcome-based indicators. Outcomes differ from outputs. Outcomes are social or environmental mid-term results, while outputs are short-term results derived from implemented activities. To focus on outcomes, NPOs should think long term. For example, Educate Girls wanted to increase learning gains. Teaching hours (outputs) should then improve students' results in Hindi and math (outcome). Output-based organizations will seek ways to reduce costs. Outcome-based organizations will seek to achieve impact. NPOs will accept to face increased short-term costs if that helps to increase outcomes. In 2014 to 2017, the output-based model is ready to scale, and costs decrease because of capacity-building.

The report of IDInsight explores the three-year evaluation of the DIB (Kitzmüller et al., 2018). Random choice of treatment and control schools took place in March 2015. Chosen sample included 12,000 students in grades 3 to 5. Educate Girls treated 332 schools and 282 villages. 141 villages were the beneficiaries of Educate Girls interventions, while the remaining 141 villages made up the control group. In 2015, experts performed a census of out-of-school girls and the baseline comparison. Yearly program assessments took place in February 2016, 2017 and 2018. As explained in the sections below, no payments occurred at the end of yearly evaluations. On August 2016 and 2017, IDInsight valued additions to out-of-school girls' census. In July 2018, the DIB intervention ended. Since it was successful, the UBS Optimus Foundation got back its principal plus a 15% IRR.

Learning gains accounted for 80% of the final DIB payments. Because of the way IDInsight measured learning gains, the outcome evaluator didn't leave room for "cherry-picking". "Cherry-picking" describes the behavior of contractors that aim at selecting easier targets. Such a negative incentive derives from contractual pitfalls (Ramsden, 2016). The testing tool used to assess students was the Annual Status of Education Report (ASER), which helped teachers to check progress in literacy and math skills. The outcome metric of learning gains considered two components: the sum of

learning gains in the treatment and control villages. Such a weighted sum encouraged the NPO to enroll new students in schools. If they performed below expectation, it affected results in treatment villages.

Students in treatment schools performed well compared to those in control schools: they gained +1.08 ASER. Total learning gains deserve attention: in year three, students in treatment schools scored +6.045 ASER. Students involved in Educate Girls programs for three years scored best. The third-year intervention produced the greatest effects. Results in grades two and three at baseline grew 79% more in the final year when compared to similar students in control schools. Students who reaped the most benefits scored low at baseline. Improvement in Mathematics and English were three times greater than those in Hindi. Treatment districts showed different patterns, with better results in Bijoliya than in Mandalgarh and Jahajphur.

Enrollment of out-of-school girls accounted for 20% of DIB outcome payments. Educate Girls census of out-of-school girls before the DIB launch. IDInsight verified such a census and its additions every year. Surveyors visited schools in which girls enrolled. They asked school staff to verify the girl's general information and to sign a form. At the end of the intervention, the NPO enrolled 768 out-of-school girls: 92% of the total eligible girls. Educate Girls exceeded the enrollment target of 16% (Kitzmüller et al., 2018).

DISCUSSION

Scholars seem to have overlooked Development Impact Bonds (DIBs). DIBs are multi-stakeholder outcome-based contracts that can bring together public and private actors and allow them to cooperate. DIBs are a platform for impact investing through which tackling relevant social issues. Their usage is specific to developing countries (Carmody et al., 2011; Development Impact Bond Working Group, 2013).

To the best of our knowledge, there are no case studies that describe successful DIBs. This study set out to examine the "Educate Girls DIB", the world's first DIB in education. The NPO Educate Girls launched the DIB in 2015. The DIB reached both its target outcomes in 2018.

Table 2 summarizes the analyzed DIB's main contractual and financial characteristics. It displays four main categories. DIB structure is the first one and shows the actors involved in the intervention. DIB key information is the second and gives relevant, yet general, notions. DIB outcomes is the third and analyzes in-depth the DIB outcomes and metrics. DIB's financial features are the fourth.

Table 2 shows that, apart from the local service provider, all the other actors are foreign. This may suggest the willingness of private and public actors to leverage their investments by exploiting service providers' local knowledge and abilities in tackling specific societal issues affecting local communities (Gazley and Brudney, 2007; Pfeffer and Salancik, 2003). Indeed, the NPO Educate Girls, independently by government, filled an institutional void in the education sector, which may be determined by country-specific factors such as politics, corruption and poverty (Heston and Kumar, 2008; Mair et al., 2012), and launched the

DIB. Such evidence is noteworthy since it demonstrates how NPOs can foster innovation and substitute governments in social service provision (Joy and Shields, 2013). Despite that, the role of local institutions remains prominent, as indicated by the signing of the Memorandum of Understanding between Educate Girls and the State Government of Rajasthan. Involving a local NPO might be beneficial for investors because it may ensure a cost-effective and outcome-oriented service delivery capable of achieving the agreed-upon outcome metrics or payment thresholds which will unlock repayments. Outcome funders, which subordinate repayments to the attainment of non-financial outcomes, are also likely to profit from the presence of a local NPO: experienced service providers aware of context-specific characteristics will be able to generate lasting social change.

It can be seen from Table 2 that the DIB has a high risk-return profile, even though does not contemplate payment thresholds to trigger payments. The high total cost of negotiation, which includes legal fees, evaluation and marketing (Assomull et al., 2015) may derive from the willingness of players to come up with a result-based contract in which the contract duration is significant and the reimbursement is in bullet form. We suggest that this may be a direct consequence of the principal-agent relationship arising among the investors and service providers. Investors require easily attainable outcome metrics for service providers to reduce the risk they bear and to get back their principal plus the additional financial return. Similarly, service providers are interested in contracting manageable outcome metrics to ensure the successful completion of the service provision and the achievement of relevant social outcomes. However, since investors adopt a financial-based logic while service providers adopt an outcome-based logic, agency problems, we suggest, are likely to arise. This leads to increasing negotiation and monitoring costs.

In the light of literature review and case study analysis, we can summarize that DIBs in their simplest form include four main actors, two financial flows and two non-financial flows. Investors are those development partners, development finance institutions, philanthropic organizations, private investors, or traditional donor agencies who supply the upfront capital commitment to service providers to start the service provision. This makes up the first financial flow of a DIB. Service providers are those public agencies, private companies, or non-profits in charge of services provision directed in favour of target beneficiaries. This makes up the first non-financial flow of a DIB. Outcome evaluators are those social consulting firms who check if service providers attained the agreed-upon contractual outcome metrics. After that, outcome evaluators submit to outcome funders a technical report which summarizes the results of the DIB. This makes up the second non-financial flow of a DIB. Outcome funders are those development agencies

or charitable foundations that complement or substitute government payments to investors (Atun et al., 2016). Their role is to unlock the second financial flow of a DIB, the repayment of principal plus an additional return to investors, if the results of the service provision are positive. Apart from those four main actors, the case study analysis suggests also a prominent role by intermediaries. They are consulting or law firms who make sure that the signed contract fits the needs of investors, service providers and outcome funders.

Since investors are financially oriented actors while service providers are non-financially oriented actors, it is likely that agency problems and control costs may arise. Their interests, in fact, are contrasting: private investors seek the reimbursement of principal plus an additional financial return, service providers aim at creating lasting social change in local communities by leveraging the received funds. Investors care for the effective use of capital for the sake of financial gains and everything which may divert from such an aim is likely to create frictions with NPOs. To overcome such obstacles towards the successful completion of the DIB contract, of importance are outcome evaluators and outcome funders. Outcome evaluations are third-party players with no financial interests at stake who ensure an impartial, quantitative evaluation of the service provision of NPOs. By doing so, they make sure that NPOs have achieved the outcome metrics specified in the contract, thus suggesting an effective use of the investor's private resources. Outcome funders, on the other hand, have their financial interest at stake in the DIB, since they are the players in charge of repayments to investors. At the same time, outcome funders are also private or public outcome-oriented players who trigger repayments only if interventions are successful from a social perspective. This mitigates an otherwise excessive focus on capital usage's efficiency by properly considering a socially oriented perspective.

Taken together, these findings seem to support the notion that DIBs may be an incentive for private investors and non-profits to bridge the institutional gaps in developing countries by undertaking interventions otherwise too risky for both parties. The legal structure of DIBs may challenge the notion that the inflow of private capital in NPOs causes goal displacement effects. Our analysis also provides some tentative initial evidence that the agency costs in PFS contracts may be reduced if the legal setup of the deal and its composition of the contrasting interests of the actors resemble that of DIBs. Practitioners may refer to this work when dealing with DIBs design in developing countries.

Conclusion

Through a careful literature review and an in-depth case study analysis, our work offers some insights for DIBs

implementation based on current best practices. Summing up, it suggests that DIBs might be a viable option to tackle relevant societal issues. Furthermore, our findings may contribute to the academic debate in several ways.

First, it highlights DIBs may encourage private investors and non-profits to bridge institutional gaps (Starke, 2006; Joy and Shields, 2013). Private investors may find in DIBs a complementary investment vehicle for their funds. Even though risky, DIBs allow partners to build upon NPOs' experience (Gazley and Brudney, 2007). DIBs can attract capital otherwise disregarded by traditional intermediaries (Mendell and Barbosa, 2013).

Second, it suggests DIBs may provide funds to NPOs willing to tackle riskier interventions. DIBs may be a tool for reducing the cost of capital of non-profits. By diversifying revenue sources, NPOs can try minimizing risks (Jegers, 1997; Kingma, 1993). We did not observe negative effects because of the private investor's involvement in the DIB. An explanation for this might be that the DIB accounted for a small fraction of Educate Girls' total funding. Since stakes were low, many of the problems identified by the literature did not arise (Jang and Feiock, 2007).

Third, DIBs seem to mitigate agency problems that arise in the initial phase of a deal (Davis et al., 1997). When agents lack trust in contractors, relationships become control-oriented and hierarchical. This happens because capital providers need control mechanisms and quantitative values to refer to interventions. Reduced agency costs characterize later partnership stages, and the same happens in DIBs. When designing DIBs, players seek to increase their control. Investors want achievable outcome measures to achieve repayment faster. Service providers want achievable outcome measures to prove that they're worth additional funds. Outcome funders prefer a fair evaluation process, since they must pay back investors. All those contrasting needs determine high negotiation costs, which drop once they sign the contract. And when criteria are clear, the relationship-building process takes place. Thanks to intermediaries and because of contract design, DIBs can create a shared platform with clear metrics upon which to build lasting partnerships. Educate Girls implemented performance management systems which increased its accountability towards stakeholders. In addition, the relationship-building capacities needed for operating the DIB will be of use for future projects.

Fourth, DIBs seem to mitigate goal displacement effects that occur when funders divert non-profits from their targets (Froelich, 1999). When investors lack trust in payees, the need for monitoring arises. Required controls, those of federal agencies, may become pervasive. Guarantee accountability requires time and resources, and so NPOs may divert from their mission for the sake of funds. They can adopt equity-based distribution policies, thus resembling governmental

agency behaviour (Lipsky and Smith, 1989). Goal misplacement effects in DIBs seem less significant. This may be because of the different nature of the funder, while governments need bureaucratic conformity, private investors only care for revenues.

Last, DIBs seem best suited to experienced NPOs and service providers. Since societal issues require cost-effective interventions, validated business models ready to scale may be the best option for DIBs players. It's not a case that Educate Girls contracted the DIB in its "Scale" phase (Dasra, 2014). Back then, the NPO replaced its data collection system and tested its performance based on activity, output, and outcome-based indicators. Improving the cost structure was one main concern of Educate Girls in years 2014-2017. Displayed in Table 1 is the general pattern of cost declining. Table 1 reveals a sharp increase in the monitoring and evaluation budget. Annual cost per beneficiary peaked in 2012-2013 when the NPO introduced outcome-based indicators. Annual costs per beneficiaries and per school are likely to continue decreasing: targeted values are \$ 2,06 per beneficiary and \$270 per school.

Some limitations affect the present study. We didn't perform a triangulation of empirical evidence by recurring to different data collection methods (Yin, 2014). This was because of time constraints and difficulties in identifying and reaching the key actors for potential interviews and surveys. We recognize that selection bias could affect our analysis. We also opted for a theoretical sampling because of the lack of alternatives (Gustafsson-Wright et al., 2017).

The present study contributes to the expanding field of impact investing (Agrawal and Hockerts, 2019) by providing a detailed analysis of a DIB best practice. To the best of our knowledge, this is the first comprehensive investigation of a successful DIB. The data reported here appear to support the assumption that DIBs are a viable tool for both investors and NPOs and that government should then place greater attention on such a new form of financing of publicly relevant projects. Practitioners may refer to this work when dealing with DIBs design in developing countries. In fact, insights gained from this study may be of help to all the parties involved in a DIB contract. Investors might contrast the legal setup of a potential DIB with the one described previously in the present paper to see if opportunistic behaviours from service providers or from other contractual parties are likely to arise. Service providers might refer to the present investigation to learn how Educate Girls adapted its organizational structure to meet the needs of capital providers. Outcome evaluators may check how the evaluation process took place and how IDinsight handled "cherry-picking". Lastly, outcome funders may check how the payment structure of a DIB might increase the likelihood of easy disbursement and which remedies devise to avoid it. We also aim to suggest future research

Table 1. Changes occurred in the cost structure of Educate Girls.

Phase	Blueprint	Validate	Prepare	Scale	Future goals
Year	2005-2007	2008-2011	2012-2013	2014-2017	2017 to date
Team size	40	103	195	570	1,400
Number of children reached	70,000	348,000	500,000	950,000	4,100,000
Annual operational budget	\$ 200,000	\$ 917,000	\$ 1.83 million	\$ 3.2 million	\$ 8.33 million
Annual cost per beneficiary	\$ 2.85	\$ 2.63	\$ 3.66	\$ 3.30	\$ 2.06
Annual cost per school	\$ 400	\$ 295	\$ 366	\$ 370	\$ 270
Monitoring and evaluation team size	0	9	20	72	-
Monitoring and evaluation budget (% of total budget)	2-3%	3-5%	3-5%	5%	-
Monitoring and evaluation budget (USD)	\$ 5,000	\$ 37,000	\$ 73,000	\$ 160,000	\$ 300,000
Model of data collection	Paper-based	Microsoft Excel-based	Microsoft Excel-based	Mobile phone-based	-
Types of indicators	Activity-based indicators	Activity and output-based indicators	Activity, output and outcome-based indicators	Activity, output and outcome-based indicators	-

Source: (Dasra, 2014).

Table 2. Educate Girls DIB's main contractual and financial characteristics.

Category	DIB structure					
	Investor	Service provider	Outcome evaluator	Outcome funder	Intermediary	
Name	The UBS Optimus Foundation	Educate Girls India	IDInsight	The Children's Investment Fund Foundation	Instiglio	
Type	Foundation	Nonprofit	Social consulting firm	Foundation	Social consulting firm	
Local actor	0	1	0	0	0	
Foreign actor	1	0	1	1	1	
DIB key information						
Outcome measure	Weight	Measurement	Payment thresholds**	Target number of beneficiaries	Social issue tackled	Target reached
Learning gains	80% of total outcome payments	ASER test score	None	15,000 children (9,000 of them girls)	Education	Y – 160%
Enrollment of out-of-school girls	20% of total outcome payments	% of total out-of-school girls	None			Y – 116%
DIB financial features						
Total cost	Contract duration	Upfront capital commitment (USD)	% of DIB secured	Reimbursement type	Minimum IRR (%)	Maximum IRR (%)
\$ 1,000,000	3 years	\$ 270,000	0%	Bullet	10%	15%

Sources: Educate Girls (2018); Gustafsson-Wright et al. (2017); Kitzmüller et al. (2018).

avenues for scholars. First, our paper may make up the basis for future cross-case or cross-country comparisons. Second, the reduction or agency costs and of goal displacement effects require

further examinations. Third, as done for social impact bonds (Del Giudice and Migliavacca, 2019), researchers should clarify the role of institutional investors in DIBs.

CONFLICT OF INTERESTS

The authors have not declared any conflict of interest.

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