What is Social Impact Bond? How to Implement it? How to Evaluate and Monitor it?

Foroogh Nazari Chamaki

Submitted to the
Institute of Graduate Studies and Research
in partial fulfillment of the requirements for the Degree of

Master of Science
in
Banking and Finance

Eastern Mediterranean University
February 2015
Gazimağusa, North Cyprus

Approval of the Institute of Graduate Studies and Research

Prof. Dr. Serhan Ciftcioglu
Acting Director

I certify that this thesis satisfies the requirements as a thesis for the degree of Master of Science in Banking and Finance.

Assoc. Prof. Dr. Nesrin Ozatac
Chair, Department of Banking and Finance

We certify that we have read this thesis and that in our opinion it is fully adequate in scope and quality as a thesis for the degree of Master of Science in Banking and Finance.

Prof. Dr. Glenn Jenkins
Supervisor

Examining Committee

1. Prof. Dr. Glenn Jenkins _____

2. Prof. Dr. Hatice Jenkins _____

3. Asst. Prof. Dr. Hasan Ulaş Altıok _____

ABSTRACT

Governments often try to solve complex environmental and chronic social challenges like homelessness, juvenile justice, high recidivism rates, inequality in education, unemployment and the like, but desired results are not easy to attained. For the most part local and state government programs fund remediation rather than prevention.

The main idea behind pay for success or social impact bond (SIB) program is to attract private sectors to fund social service interventions and provide this social service programs' upfront funds to achieve improved results and outcomes on a specified target.

SIB is a social finance innovation and contractual arrangement that governments use it to implement a public /private partnership (PPP). It is a new and innovative way of bringing the public and private sectors financed together to achieve certain development goals. If a program is successful and profitable, taxpayers would pay back the investor. But if the program doesn't meet certain goals, taxpayers are not in risk, they keep their money and investors take the loss.

Keywords: Pay for success, social service, social impact bonds, PPP or public (government) and private sector partnership, social finance, service provider.

ÖZ

Hükümetler Evsizlik, çocuk adaleti, yüksek suç işleme oranları, eğitim eşitsizliği, işsizlik gibi sosyal sorunları, çozüme kavuşturmak için devamlı çaba sarfederler. Ancak arzu edilen sonuçları elde etmek kolay değildir.

SIB programın ardındaki temel amacı, belirli sonuçlara ulaşmak için özel sektörü devreye sokması ve bu sosyal programların başarısız olma riskini özel sektöre aktarmasıdır. Bu durumda devlet vergileri sadece başarılı programlar için harcanmış ve özel sektör belirli bir sonucu elde etikten sonra ödeme yapmış olur.

SIB devlet ve özel sektörün ortaklıklığıyla sözleşme yaparak getirmiş bir yeni yoldur. Eğer bir SIB programı başarılı ve karlı olursa, devlet yatırımcıların sermaye ve faizini ödeyecektir. Ama eğer program belirli hedeflere uymazsa, yatırımcılar sermayelerini kaybederler.

Anahtar Kelimeler: Sosyal hizmetler, kamu ve özel sektör ortaklığı, sosyal finans, servis sağlayıcı için ödeme, sosyal etki bondu.

ACKNOWLEDGMENT

I am using this opportunity to express my deepest appreciation my supervisor Prof. Dr. Glenn Jenkins for his invaluably guidance and encouragement and motivation during of this study. His friendly advice and sharing his illuminating views, made me interested in social services and social impact bonds.

I would also like to thank my instructors in Banking and Finance department to prepare this chance for me to do my master degree in EMU University.

I express my gratitude to my father and mother for their support and guidance in each step of this study. Words cannot express my appreciation for all of your support and sacrifices.

At the end, I would like to thank Elman and Elin. In each line of the writing I had you in my mind and in my heart.

My friends and classmates were with me along this path with their kindness, encouragement and understanding.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF SYMBOLS/ABBREVIATIONS

A&F	Administration and Finance
CBA	Cost benefit analysis
CoSA	Council on Social Actions
DH	Department of Health
NHS	National Health Service
NICE	National Institute for Health and Clinical Excellence
PCTs	Primary Care Trusts
PFC	Pay for success Contracts
QALY	Quality adjusted life year
RFI	Request for Information
ROR	Rate of Return
SIB	Social Impact Bond
SWB	Subjective well-being
TOP	Teen Outreach Program
UK	United Kingdom
USA	United State of America

Chapter 1

INTRODUCTION

1.1 Social Financing

The social financing concept is related to investors seeking to gain financial benefits and a return by investing in environmental and social projects. These groups of investors bear higher risk and are willing to accept lower returns than commercial investors. They attempt to gain financial benefits as well as social benefits. Indeed, social financing can be placed between commercial investing and philanthropic organizations and charitable donations.

The USA and Europe have shown a rapid development in social financing in recent years, for example socially on-screen portfolios in USA reached $3.07 trillion in 2010 (US SIF, 2010). The total assets under SIB management in USA expanded from $3.74 trillion in 2012 to $6.57 trillion in 2014, a 76% increase. This shows a faster growth in social financing than traditional commercial investments (US SIF, 2014).

1.2 Social Services

Social services are a kind of public service that governments or private sectors provide to promote social well-being. These public services aim to create benefits and facilities for society. In short social services are services necessary for the general well-being and the systems needed to promote that. The well-being concept is concerned with how well people are able to live and how they are treated when

faced with circumstances. These services are mostly provided by state and local governments, but also private organization, social groups, charities and philanthropists. Local associations and churches are active in this area.

1.3 Social Impact Bond

Pay for Success Contracts (PFC) or in other words Social Impact Bonds (SIB) are multi stakeholders innovational mechanisms designed to finance social issues through a partnership between governments and the private sector. Their aim is to provide more efficient social services while saving taxpayers money.

A SIB is a contract between one or more public entities (at the local or state level) and a private organization, called service provider. In such an agreement the government specifies the outcome. Financial investors shoulder the up-front cost and service provider uses this fund to implement the project. If the outcome is achieved in accordance with the contract, the government is committed to pay investors a predetermined amount at a specified time. But if the expected result is not attained, the government not compelled to pay up and investors sustain the loss of the funds they have spent. After a monitoring entry affirms that the project was successful and the predetermined outcomes achieved, investors will be paid their principle investment plus a certain amount of return that is linked to the level of progress of the project and the specialization of the contract. These returns come from the savings accrued to the government by implementing the project through the SIB model.

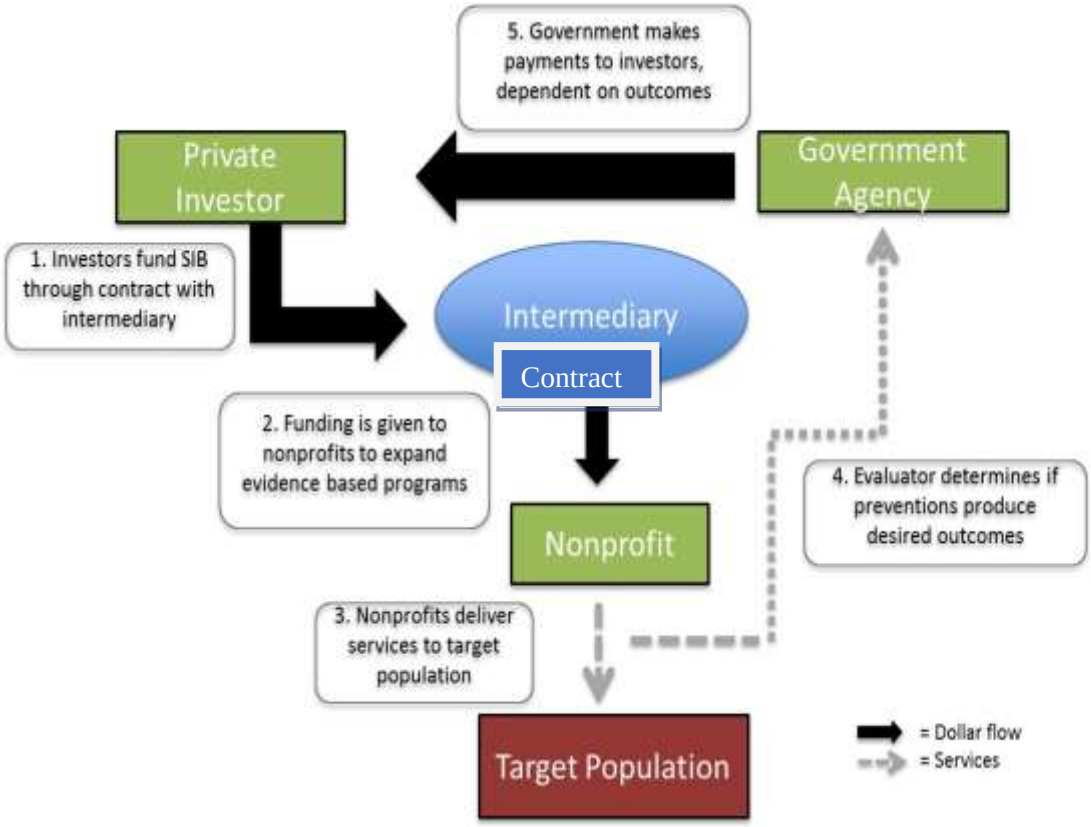

Figure 1: Basic Model of SIB contrast

In these days governments are facing a long-lasting economics crisis and tight budgets while at the same time they face an increasing demand for social services by society, SIB could be a significant key to help governments provide more effective social services. Indispensible conditions for implementing a SIB project are a strong potential in reducing the costs of government, the ability to produce meaningful cost savings, the availability of clear and measurable outcomes, finding effective coordinator and making clear contracts that are properly adjusted among multiple stakeholders, governments and service providers, and the pressure for effective coordinator.

According to the Social Impact Bond Technical Assistance Lab of the Harvard Kennedy School of government there are many important concepts that should be considered before deciding if a SIB is appropriate to implement or not. In the first

step it should be determined if SIB is suitable for the project in question then find the right policy intervention pursue. Second find the best analysis tools, designing a model matching the project's specifications and a plan to formulize structures so that all parties can work efficiently and benefit from the achieved results is critical. Third, monitoring is required to all phases, and finally is used to determine if the project has achieve the desired outcomes and at last the project is completed by delivering the payments according to the SIB's contract.

Relevant to this point there are situations and conditions that qualified for SIB models and some policy areas that cannot be implemented by this method. This means that SIB cannot be applied universally and to every fiscal project.

The proposed opportunity areas where SIB can implemented effectively are in the fields of education, criminal justice, foster care, healthcare, job-training and the disability sector. These areas have high a social need and inflict high costs on governments.

The peril of looking at SIB as the potential to save taxpayers and to ease economic tensions is the overlook the progress being made and improvements of other financial tools and mechanisms. We will lose the core founding mechanisms in the delivery in social services if we just act on the borders. This model shouldn't be used as a replacement; it should be used as a help to improve traditional systems. Governments should not use SIBs as an excuse to cut the budget for social services.

One significant benefit of SIBs for the government is that it is an opportunity or freedom to be innovative. Innovation has great risk and at the same time great

rewards. But government entities cannot afford this great risk with a limited budget. SIB is a useful tool to help government to transfer this risk to the private sector and at the same time private sector can gain great rewards from taking this risk while being engaged in a altruistic activity. From the private sector's point of view SIBs are a win-win instrument.

There is a need for independent monitoring and evaluator of the impacts and outcomes for executing a SIB. This evaluation promotes accountability, prevents the project from going far from specified outcomes, sometimes stops the project if the costs are more than expected and finally by learning more details and information about the implementation of a SIB project for future implements be made. This information is effective to attract beneficiary stakeholders and society development professionals to urge them to support the SIB model in order to attain their determined targets and intentions through this innovative financial instrument.

There are concepts in SIB contracts that must be specifying accurately to have a feasible SIB project. The contracts should be defined on the following parameters:

Outcomes, SIB should measure the outcomes clearly and precisely for the future based on outcomes estimate from past performance.

Rate of return (ROR), is the amount should be paid to investors after achieving specified outcomes. It will vary based upon the outcomes that are achieved.

Service delivery, SIB should find the most effective delivery service that leads to a feasible project. Choosing the right target population, the quality of service provided and the scale of project will affect the feasibility of the SIB project.

Project period, it should be determined for how long the fund would be provided to the service provider to deliver to the services and whether the funding would be available yearly and the amount for each year.

Payment point, it should be determined whether these payments will be made to the investor, will it be made annually or at certain point of the projects implementation or after achieving certain specified outcomes.

1.4 Advantages of SIB

Under a social impact bond model the public sector (state or local government) pays only for successful projects, for outcomes and results, so it is a reasonable cost saving for government and the taxpayer's money, to use it just for effective successful projects. It eliminates the risk of budget losses through ineffective projects and transfers this risk to the private sector that can bear it better.

Using SIB makes the project achieve a high quality through feasibility analysis and the monitoring of the implementation for each step in orders to reach the specified scale and desired outcomes. In other words, a SIB improves the performance and lowers the cost at the same time.

After SIB project focuses on prevention rather than remediation, its outcomes contain cost savings for the government if it is able to achieve a better quality social

services for society. In other words, a SIB provides quality social services at a lower cost; it benefits all parties, government, private sectors and society.

It is an incentive innovation that encourages social investors to invest in social projects that open new sources of funding for government and public sectors.

SIB accelerates the changes needed in a project in order to adapt to new situations and it frees implementers hand to make any alterations and modifications that is necessary to make the project more efficient and effective.

SIB and the independent monitoring structure leads a situation that causes a more rapid learning about what works.

1.5 Structure of this thesis

The beginning of this study started with a brief review of the concepts of social financing and social services, Social Impact Bonds were then introduced as an innovative financial tool has the potential to bring lots of benefits both for society and taxpayers.

In chapter 2, a brief literature review is given on the studies that have been done on SIB till now. By studying the history of SIB and its spread on Europe, United States and other part of world I tried to study the background of it. Then I focused on the historical development of SIB and gave some information about the Peterborough SIB pilot, its contract and implementation details.

Later in chapter 3 a discussion is made about SIBs implementation, its contracts and different models of launching this social financiary device.

In the chapter 4, two cases are reviewed that were done in the USA and the UK. Focusing on the cost benefit analysis and sensitivity analysis of these two cases, we can get a clear perspective of which projects and programs where SIBs can be implemented. In the last section an analysis will be done to determine how a SIB project should be evaluated to determine the level of meaningful cost savings and to see if it can be counted as a successful project.

The last chapter, chapter 5 is a conclusion of this study and I tried to give the key messages I learned with analyzing this two cases and other SIB projects.

Chapter 2

LITERATURE REVIEW AND HISTORICAL DEVELOPMENT

2.1 Literature Review

The literature reviewed in social impact bonds can be divided into several groups. The first group describes the concept of Social Impact Bonds, why these kinds of bonds were invented and why they became popular, what are the origin of these bonds and the history of them. These literatures show UK as the first country where SIBs were invented and operated. This was the implementation process in Peterborough Prison SIB. The focus of the first group of literature is the UK and the testimony of the necessity of the kinds of social bonds in today fiscal environment of the government constricted budget and increasing demand of social services.

The second group of literature describes the social impact bonds in and out of the UK, in Europe, Canada and US. They discuss the different legislation and regulation authority accordingly the intrinsic operation and implementation of SIB. They describe the changes that should be applied to these structures in order for them to fit each region and country. There are several literatures explain the different implementation of SIB in different projects after the Peterborough Prison SIB.

2.2 Origin and History of SIB

The concept of SIB originated in 2007, from the United Kingdom, where Gordon Brown (Prime Minister) asked the Council of Social Action "to generate initiatives through which government and other key stake holders could develop and celebrate social action"(Strickland, 2010).

The roots of SIB originated from studies done on social innovation that attracted the attention of governments in the UK. SIB is one of novel solution invented to address social problems. The need to find new ways to control the costs of social services brought SIB to consideration.

In 2006, UK government invented a new way to support social innovation and to coordinate the third sector which includes: charities, voluntary communities, social adventures and philanthropists.

In 2007, the Office of the Third Sector created the Prime Minister's Council on Social Actions (CoSA), to act independently as an advisory section. Social Impact Bonds through preventive and early intervention projects increase social benefits. SIB prepares a situation where governments, social sectors and investors can work together in an innovative partnership to find solutions for social issues and solve them with less cost through feasible projects.

CoSA perused the applications of SIB concepts and focused on existing projects that were costly for the government. They focused on roots instead of consequences. They were interested in social areas like homelessness, criminal justice, schooling, foster care, health care and mental care.

Two years later in 2009, it was implemented at Peterborough and in September 2010its services were launched. The Ministry of Justice used £5 million from the charities and private sector's fund to pilot an intervention project for offenders released. Peterborough is operated by Sodexo Justice Services as a category B prison (Disley, 2014). In this scheme 3000 male offenders who were at least 18 years of age are treated in 3 groups. The project started with the aim of reducing recidivism rates. The U.K. Ministry of Justice, the Big Lottery Fund and Social Finance (U.K.) as private investors are the bond-issuing partners (Centre for Social Impact Bonds, 2013). The contracted time of this SIB is six years and evaluations are not available due to the fact that the program is not finished yet but evidence and available information shows that the services implemented through SIB caused an 8.4% reduction recidivism rates compared to a sample group that haven't received any of these services. Even the results were positive and this first SIB seems to be successful but investors have to wait two more years to get paid under this program. Likewise the result of 8.4% reduction was not so far of the minimum threshold has set by project of 7.5% reduction, so investors would not receive early return at this point since the reduction was not big enough (Perakis, 2014).

In 2010, the UK Ministry of Justice announced the first SIB related to the reduction of recidivism at Peterborough Prison. This SIB joints St. Giles Trust as a social service provider, the Ministry of Justice as a government partner and Social Finance UK as the intermediary.

The main logic to pilot a SIB project is to reduce the costs. According to the UK Ministry of Justice, 60% of released prisoners will reoffend within a year. The added

costs of committing the new crime, policing, property damage, court and legal fees, health care costs are a burden on the UK government that is estimated to be near 10 billion GBP annually.

The St. Giles Trust offers support to prevent short-term prisoners to return to crime life. This SIB project focuses on education and trainings. Researching the effectiveness of the project shows a 40% decline in reoffending. For every 1 GBP invested in Peterborough's SIB, the government saved 10 GBP.

In the St. Giles Trust program, the role of SIB is to finance the services and operations. This SIB project is a six to eight year program. It generates 5 million GBP to provide services for 3,000 short-sentenced male prisoners. If the reoffending rate is reduced 10% by this project compared to a national control group, investors will receive returns. Investors will receive a minimum of 7.5%; with a maximum of 13% return on their investment depending on the results. This return on investment will be paid in year six and eight.

Most recently UK Ministry of justice announced six more SIB pilots for criminal sector.

Most of the investors and funders of SIB in Peterborough are philanthropists and charitable trusts. The £5 million social finance rose from 17 investors including the Henry Smith Charity, Barrow Cadbury Charitable Trust, Johansson Family Foundation, Esmée Fairbairn Foundation, Lankelly Chase Foundation, Friends Provident Foundation, Panahpur Charitable Trust, The Monument Trust, the Tudor

Trust and Paul Hamlyn Foundation (Social Finance, 2010). Further the Big Lottery Fund supported the pilot by £6.25 million in funding.

Europe has a high level of social services as governments are responsible for providing effective and efficient social services for their citizens. The idea of the private sector providing social services is unusual and not acceptable according to European legal structures. While providing a high level of social service by governments in Europe, SIB would be perceived as a process that would force out public funding and replace it with unreliable private that had the obligation of achieving only certain outcomes.

However the pressure of tight economics and financial constriction and the increasing demand for social services in many European countries has forced governments to accept SIB as an opportunity to keep the level of their service high. In this case in order to overcome to legal and initial hurdle, they posit SIB as insurance and seed capital to success in innovative social programs.

In Belgium the management committee of the Brussels Employment Agency with the support of the Brussels regional government agreed in January 2014, to launch the first SIB in Belgium. This project also is one of the first SIB mechanisms implemented in Europe; it will be operated for 3 years in juvenile recidivism prisoners of between 11 to 18 years of age (Dermine, 2013).

Maryland in the United States became the first state in 2010 to adapt the SIB model (Mosenson, 2013).

In May 2011, the Executive Office of the Administration and Finance (A&F) of the state of Massachusetts in USA issued request for information (RFI) for a SIB program. Later in August 2012 in two critical areas of Chronic Homelessness and juvenile justice the Commonwealth became committed to pursue the SIB contracts (Mass, 2012). This state has launched a SIB in juvenile justice, in January 2013 in which 1000 young men were involved. The project was designed for 7 years. $18 million was fund provided as investors by New Profit, Goldman Sachs, the Laura and John Arnold Foundation, The kresge foundation, The Boston Foundation and Living Cities. If the project meets its target goals the commonwealth will pay $27 million to the investors (Humphries, 2014).

In 2012 the first SIB contract in the United States for reducing juvenile recidivism was made by the state of New York for Rikers Island prison. The investor Goldman Sachs paid the intermediary $6.9 million to implement the project. If the rate of recidivism is reduced by 10%, the principle will be repaid in full, if a larger percentage reduction of more than 10 occurred, $2.1 million as profit will be paid. The exceptional part of this contract in comparison the traditional SIB mechanism in New York, Rikers Island project instead of all Goldman's fund, he stands to lose just $2.4 million (Callanan, 2012). Andrew Cuomo, New York's governor launched a 4 years recidivism and employment SIB project, in December 2013 which was funded $13.5 million (Humphries, 2014).

In 2012 the McKinsey and company published the report titled "*From Potential to Action: Bringing Social Impact Bonds to the U.S.*" and scheme the feasibility, evaluation and panorama of SIB in USA (Hansbrough, 2014).

In 2012, president Obama, ETA (USA Employment and Training Administration) and DOL (USA's department of Labor) proposed $20 million for SIB grants (Dermine, 2013).

In 2013, Harvard's Kennedy School of Government offered technical assistance to governments in 9 states (Chicago (not a state), Colorado, Connecticut, Denver (not a state), Massachusetts, Michigan, New York, Ohio and South Carolina) (Humphries, 2014).

Without the support of Prof J. Liebman and the Mossavar Rahmani Center of Business and Government at Harvard the project would not have been possible in Belgium.

2.3 The Success and Failure of SIBs

There are some SIB projects that are being implemented at the moment but have not finished yet. So there is no evidence of a completed SIB and we don't have any successful model of SIB. But there are some cases that SIB couldn't be a feasible case and have failed.

In September 2009, the local NHS primary care trusts (PCTs) in partnership with the Birmingham city council, started the "Be Active" program using SIB. The aim of Be Active was to provide free swimming and gym at the off-peak hours at sport centers in Birmingham city to encourage people to participate in physical activity. The effect of this project was an increase health quality (it was measured by the term of QALYs), decrease in smoking and increase in the shared experience of this program

that estimated by subjective well-being (SWB), the development of subjective well being.

In this project because the achievable benefits are equal to the costs and it couldn't gather sufficient cost saving, it may not be considered as an attractive project for investors (Marsh et al., 2011).

Wyman Center's Teen Outreach Program (TOP) is another project that tried to implement a social impact bond proposal. Wyman is one of the organizations in 32 states of the US that has received a grant to support the evidence-based TOP program that its aim is preventing teen pregnancy. TOP found the SIB to reduce the likelihood of women participants getting pregnant during their academic period of life. Total students in this project were 8000 over a four years program. But after doing the feasibility analysis, it came out that the cost savings are not enough to cover the costs over the life of project (Dao, 2012).

Chapter 3

INSTITUTIONAL STRUCTURES FOR SIB

3.1 Contract of Social Impact Bond

The SIB represents a completely new funding mechanism that was not done before. It is different in commission, finance, contracts, partners and even the evaluation and analytical concepts than the process governments usually operates in the delivering social services. Normally governments seek contractors through a competitive process in order to increase the possibility of obtaining the best value of funds. The contract between the government and the intermediary in a SIB is not through such a process. The decision of choosing the contractor is not done competitively; it is based on a proposal that seems to be feasible and worth implementing in order to create a meaningful cost savings for the government. Building a SIB is obviously a collaborative endeavor.

If used on a larger scale, constructing a competitive market for SIB will be necessary. Developing such a market would have implications for the size of the required commissions to attract participants. With a larger scale governments would make contracts with intermediaries instead of providers and the provisions of contracts would be based on outcomes rather than processes.

3.2 Different SIB models

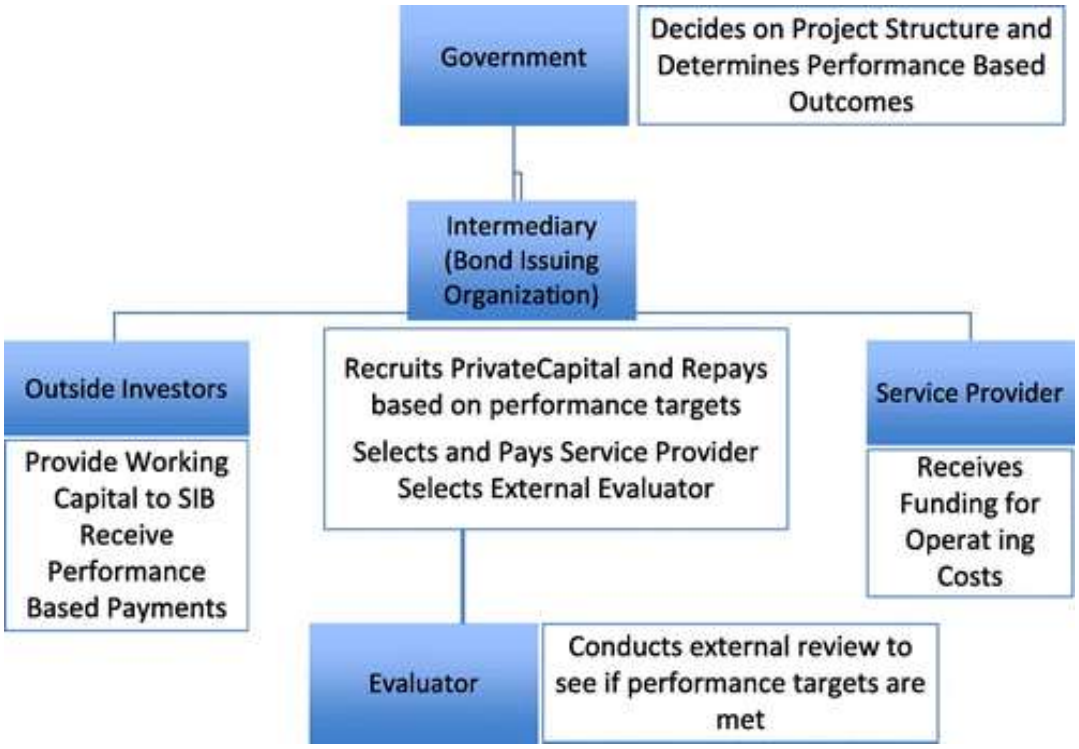

Figure 2: The Social Impact Bond model

Social impact bond is not a model to be used in every project but rather based on a specific criteria. There are limited area that SIB can be used like juvenile justice, homelessness, health care and in each project there should be a special model with particular evaluation and assesment. In some models there is no need for an intermediary so the service provider may act also as an intermediary too. In this cases the nonprofit investors and philanthropists fund the project through the contract with a service provider and the service provider implements the project by using this working capital and after achieving the expected targets (determined in the contract between the government and service provider), the government would be pay the philanthropic investor the performance based payments including the initial amount

and determinded rate of return. In this case again an independent evaluator is needed to assesses the promoting of implemention to certify of the expected results are met.

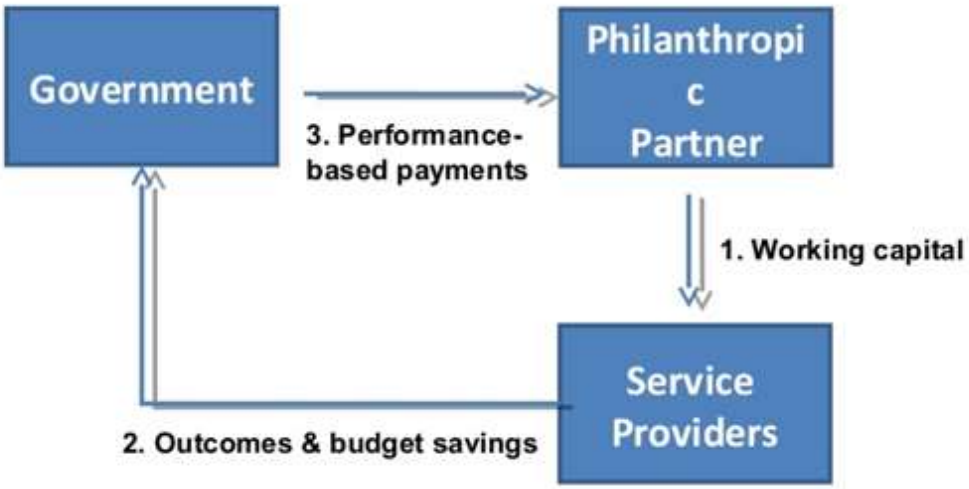

Figure 3: Another possible structure

In some cases there isn't any contract between government and private sector and every transaction occurs through service provider. In this model service provider contracts with the philanthropist and use the working capital to meet specific targets. After an independent evaluator certifies the results were met, the government will pay service provider the specific amount of money that will cover the principle that investors paid at first plus the interest that agreed to be paid in the contract between the government and service provider upon achieving specified targets.

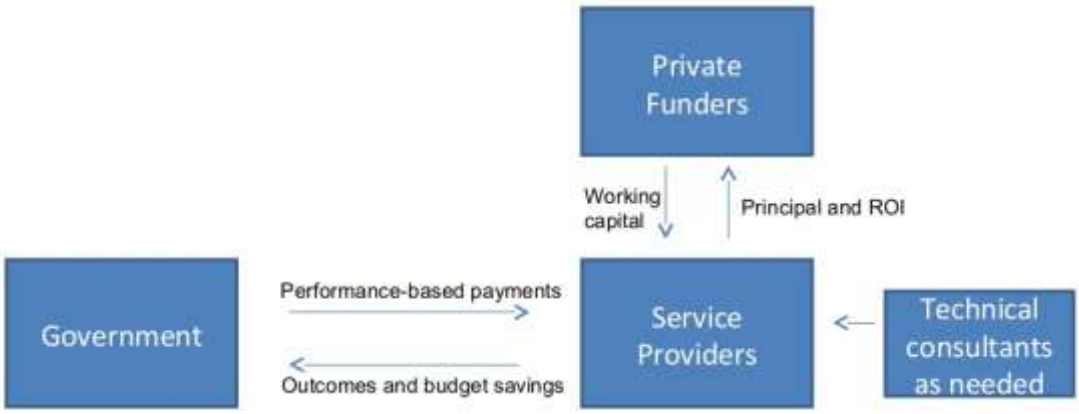

Figure 4: And another possible structure

In some rare cases social impact bonds are between national government and state government. In this particular case local governments cumulate working capital for the project and implement the project through a service provider. After achieving an expected target the state government will pay the local government the upfront fund plus the interest determined in a contract between local and state governments.

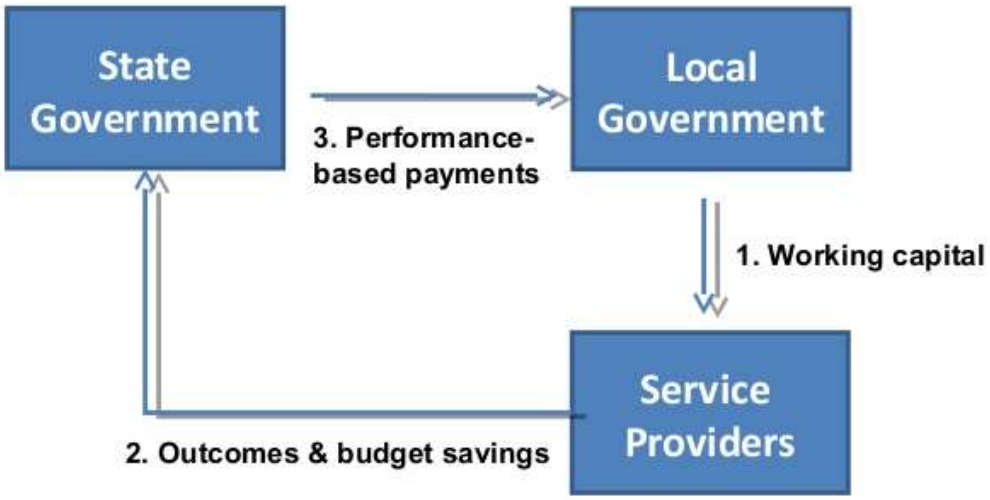

Figure 5: Yet another possible structure

Chapter 4

CASE STUDY OF SOCIAL IMPACT BONDS

4.1 Be Active

Be Active is a program that was implemented in Birmingham city to provide its residents with a free of charge access to gyms, swimming pools and any exercise classes during the off-peak hours of these centers. The aim of preparing this program was to increases the health level of people and removes any barrier to accessing these centers. This program had an objective of promoting social integration among members of the community (Marash et al., 2011).

The effect of this program would be to increase physical activity, reduce the smoking level and increasing the opportunity for a shared experience. The increase in physical activities and decline in smoking can be estimated in monetary terms by reducing the cost of health care and generating savings to the government. It produces health-related quality in the life of residents and their productivity in life that measures in concepts of QALYs or quality adjusted life years. The subjective well being (SWB) was a result of the effect of the Be Active program in creating a shared experience (Marash et al., 2011).

Be Active was evaluated through a feasibility analysis and a cost benefit analysis (CBA).

It is estimated 140,000 out of 1.1 million citizen of Birmingham participated in Be Active in each year. The profits produced through this program were £445.2 million more than its cost. The profits that are counted in this assessment include the health care cost savings, QALYs and productivity gains through reduced smoking and increased physical activity. Furthermore, by preparing an opportunity for share experience through this program, participants gain 5.9% increase in their life satisfaction (a measure of SWB) (Marash et al., 2011).

Be Active program according cost benefit ratio generates £21.3 for each £1 invested in this program but it varies for each one of the investors depending on the incurred cost and benefits achieved per £1 spent on this program, return for the local NHS is £22.8. The greatest benefits are as QALY gains, and a smallest part of these benefits are the amount of £2.6 to £0.5 related to medical cost savings.

Diminishing absenteeism is the benefit of Be Active for the Treasury and employers which results in increased tax payments and improved productivity. The cost of QALY gained in Be Active program is £1,164.6 that is far below the amount represents as health interventions' monetary terms used by NICE [1] (£20,000) to decide investment in public health interventions. This result shows Be Active represents an efficient use of resources.

According to the feasibility analysis done using these data the cost profits and benefits gained through this SIB are not sufficient to the government to pay back even the principle of investors. It is possible to monetize the return to investors just

[1] The National Institute for Health and Care Excellence is an independent institute set up in 1999 in UK

for the QALYs gained. The results from cost benefit analysis declare: in first five years of the program, just a small portion of public sector cost benefits are gained through this SIB. The participants in this program enjoy the most of benefits through the increase in their life quality. Further only local health authorities enjoy the benefits through secondary care that is gathered by this program, in addition to the health care cost savings and gained life quality, Be Active also resulted in an improved shared experience from being an active participate in a sport club, that effect on SWB and brings a higher life satisfaction.

Table 1: Be Active's several benefits used in cost benefit analysis

	Physical activity	Smoking	Shared experience
Health care cost savings	✓	✓	
Quality of life gains	✓	✓	
Productivity gains	✓	✓	
Subjective well being gains (*)			✓

(*) Not monetised.

Source: (Marash et al., 2011)

The avoidance of treatment costs for lung cancer and type II diabetes and illnesses that resulted from lack of physical activity and smoking are resulted in health care cost savings through this SIB. Improvements in health-related quality of life gained and evaluated £20,000 for every QALY, according to the National Institute for Health and Care Excellence (NICE). Also improved short and long-term health gains and productivity gains result from reduced absenteeism. These benefits expressed in employed individuals.

Costs and benefits can be considered through different dimensions: perspective (different stakeholders), timing and realizability.

Table 2: Costs and Benefits attributed to each stakeholder

	Local NHS		Local authority	Treasury	Employers
	Primary care	Secondary care			
Cost of Be Active	30%	55%	15%		
Benefits of Be Active					
Immediate health benefits	100%		100%		
Short- and long-term health benefits	35%	65%			
Productivity gains				15%	100%
Subjective well being gains			100%		

The benefits are calculated over the lifetime of individuals for 50 years and the benefits were classified into three groups: 1 to 5 years (short-term), 6 to 15 years (medium term) and years 1 to 50 (lifetime).

The benefits were classified as realizable to the following criteria that were used to estimate the cashable and monetary benefits:

- ***Health care cost savings.*** Avoided medication costs are the only health care costs savings that was a realizable cost.

- ***Productivity gains***. Increased corporate tax payments through increased income for employers for the Treasury were assumed as realizable productivity gains.

All monetary figures are calculated according the 2011 prices and a 3.5% discount rate according the Green Book guidance.

Return on investment metrics are the net benefit that is calculated as the total benefits attributed to the program minus the total costs of implementing and the net benefit per person is calculated as the average benefit per person minus the average cost per

person. The QALYs cost is calculated as incremental cost to QALY gained ratio that is according to the standard return on NICE's investment metrics.

The cost benefits analysis of Be Active results:

The aggregate cost over five years is estimated at £22.0 million and the benefits exceed its cost by £445.2 million for 140,000 participants. This net benefit includes £28.7 million as cash savings, £39.2 million as productivity gains and £377.2 million as improvements in quality of life (QALY). Cost benefit analysis over life time of an individual represents £3,202.7 per person benefits for every £1 invested in this SIB and the cost per person is £33.8 per year. Be Active program generates on average £21.3 in benefits.

Be Active program is funded through a partnership between Birmingham City Council and the local NHS primary care trusts (PCTs).

If it assumes that Be Active users would stay in this SIB for five years, the total cost of Be Active per person after discounting would be £158.0. So the total cost of Be Active was calculated as £22.0 million, of which Local Authority funded £3.3 million (15%) and the local PCTs funded £18.7 million (85%).

The effects of Be Active have estimated:

- 8% increase in physical activity at least three 30 minute per week (Lyon et al., 2011; Harland, 1999; York Health Economics Consortium, 2007).
- 3% increase in the possibility of quitting smoking (Lyon et al., 2011).
- 74% increase in the possibility of participating in a shared experience (NHS of South Birmingham, 2010).

The smoking quitters and participants having increased physical activities achieve the increase possibility of health related benefits. For instance, the chance of having a blow or stroke was reduced 8% by having long-term physical activities or 7% decline in developing type II diabetes, whilst quitting smoking reduces 2% the risk of lung cancer and 5% myocardial infarction. Besides generating £20,000 per QALY for each person by avoidance of these diseases, it also generates thousands of pounds value of treatment cost savings to the NHS (Matrix, 2011). On other hand, staying physically active causes a 29% decline in the yearly visits to physicians and this is also generates cost savings for NHS.

In addition to all these benefits, the life satisfaction would be increased by being an active participant of a sports center by 0.04 points while the significance level is 0.05, on a scale of 0 to 1. According to these results the chance for shared experience presented by the Be Active program makes a small but significant effect on SWB.

Table 3: Life time benefits by stakeholder and type of resource

Benefit measure	Stakeholder					
	Total	Local NHS		Local Authority	HM Treasury	Employers
		Primary care	Secondary care			
Benefits per person (in £)						
Realisable benefits	**364.84**	23.71	44.63	0.00	44.53	296.50
All cost savings (incl. realisable) and productivity gains	**647.22**	125.14	225.59	0.00	44.53	296.50
QALYs gained	**2,713.53**	977.42	1,736.11	54.86	0.00	0.00
Total (*)	**3,360.76**	1,102.56	1,961.70	54.86	44.53	296.50
Total benefits (in £m)						
Realisable benefits	**50.71**	3.30	6.20	0.00	6.19	41.21
All cost savings (incl. realisable) and productivity	**89.96**	17.39	31.36	0.00	6.19	41.21
QALYs gained	**377.18**	135.86	241.32	7.63	0.00	0.00
Total (*)	**467.15**	153.26	272.68	7.63	6.19	41.21

(*) Total does not add up benefits as some benefits are relevant to more than one stakeholder.

Source: (Marash et al., 2011)

The net present value (NPV) of the lifetime benefits per each participate of Be Active is £3,202.7. This includes the monetary term of the smoking and physical activity.

The estimated results demonstrate that Be Active program is cost-effective. These results represent an efficient use of public resources. But they are subject to some level of uncertainty (due to the nature of the data available). However results were gathered from different sources of data including: in terms of increasing physical activity and reducing smoking, the possibility of avoidance of diseases associated with these activities and smoking reduction and the cost savings associated with them plus quality of life gains.

Table 4: Returns by stakeholder and type of resource (in £ 2011 prices)

Return on investment metric	Stakeholder					
	Total	Local NHS		Local Authority	HM Treasury	Employers
		Primary care	Secondary care			
Net benefit per person (in £)						
Realisable benefits	**206.83**	-22.89	-43.08	-23.70	44.53	296.50
All cost savings (incl. realisable) and productivity	**489.21**	125.14	225.59	-158.01	44.53	296.50
Total	**3,202.75**	1,055.95	1,874.00	31.16	44.53	296.50
Total net benefit (in £m)						
Realisable benefits	**28.75**	-3.18	-5.99	-3.29	6.19	41.21
All cost savings (incl. realisable) and productivity	**68.00**	10.92	19.17	-3.29	6.19	41.21
Total	**445.18**	146.78	260.49	4.33	6.19	41.21
Benefit-cost ratio						
Realisable benefits	**2.31**	0.51	0.51	0.00	-	-
All cost savings (incl. realisable) and productivity	**4.10**	2.69	2.57	0.00	-	-
Total	**21.27**	23.66	22.37	2.31	-	-
Cost per QALY	**1,164.61**	953.64	1,010.35	8,640.14	-	-

Source: (Marash et al., 2011)

If the intervention succeeds, the public sector like other SIBs pays the investors a return based on pre-defined measures of social outcomes.

4.1.1 The feasibility analysis of SIB

One critical benchmark in evaluating the feasibility of social impact bond is the size of the cash value added from outcomes through SIB. In other words whether the public service commissioners would have sufficient cash savings through implementing the project, and if these savings by using SIB is comparatively beneficial as opposed to a project without it.

The costs of implementing and running the social services have to be covered by the cash savings, the principle, as well as the return needed to compensate investors' risks.

Aside from outcomes, there are other important criteria that make an SIB successful, such as having measurable outcomes and a comprehensive contract based on expected outcomes (*Social Impact Bonds, A Technical Guide*, Social Finance, 2011). This case study mainly focused on evaluating the cash savings of expected outcomes as a critical step in feasibility of SIB.

There are different contract scenarios that can be used to assess the feasibility of Be Active SIB to be funded. These scenarios can vary upon the terms of definition based on the following simplified criteria:

> ***Service delivery***. Be active can be delivered to 100,000 persons who have normal economic background or to 50,000 persons with deprived economical characteristics. Because this is an initial assessment, assuming each of these two options would not accrue additional costs for SIB managers and financers and investors.

Outcomes. To be an SIB project the outcomes have to be measurable and in accordance with estimate outcomes in the future that would match with past performance. To simulate private sectors investment, the SIB should have better performance management plus greater innovation. So SIB should have higher outcome action.

Rate of return. The real rates of return were assumed annually: as 5%; or 7%.

Intervention period. It was estimated that Be Active funding would be provided yearly and up to 5 years to be delivered to the intervention.

Payment point. It is estimated that returns and benefits on the investment to be paid annually after outcomes have been verified. Then based on the intervention period, the total return includes an aggregation of the principle amount of investment plus compounded return earned in each year.

Benefit to commissioners. Typically SIB contracts consider three types of benefits and realizable cost savings that commissioners were focused on: (1) realizable cost savings just without medication costs; (2) non realizable cost savings; and also (3) QALY gains in monetary terms.

Commissioners' readiness to pay. The commissioner would pay for these three kinds of benefit mentioned, as follows: (1) 80% of short-term cost savings for first 5 years; and (2) 20% of medium-term cost-savings from year 6 to 15.

There are two alternatives that commissioners will pay for QALY gains: (1) 0% means commissioners are not agree to pay for gains related to QALYs or (2) in short term 80% of a QALY (£20,000) according to the value presented by NICE, and in the medium term 20% for this QALY value.

4.1.2 Results

Table 5: A sample for social impact bond contract feasibility analysis

Scenario	Total cost of successful SIB (£m)	Benefits available to pay investors (£m)				Net benefit (£m)
		Realisable cost savings	Non-realisable cost savings	Savings from QALYs gained	Total	
A	20.08	0.4	2.07	0.00	2.47	-17.61
B	20.08	0.4	2.07	39.91	42.38	22.31

Source: (Marash et al., 2011)

The table above declares two different contract scenarios of Be Active feasibility analysis. In both of these scenarios Be Active is delivered to 100,000 persons in five years, and rate of return would be 7% annually if expected outcomes are gained. The distinction among scenarios A and B is:

Realizable cost savings. As is evident from the table above commissioners are willing to pay 20% of medium term and 80% of short-term savings in both scenarios.

Non realizable cost savings. Commissioners are willing to pay 80% for short term cost savings and 20% for medium term cost savings in both scenarios.

QALY gains in monetary terms. In scenario A there is no willingness to pay for QALY gains, while they are willing to pay 80% of the value of QALYs gained in short-term and 20% in medium term in scenario B.

According to the results in the table above the benefits gained through Be Active are not sufficient to merit paying back investors if just realizable cost savings and non realizable cost savings are considered. Only it is possible to provide the payment to investors if commissioners accept the QALYs gained as while calculating the benefits and results of Be Active and willing to pay for QALYs gained too. It shows in graphical terms in Figure 3-6.

If commissioners are willing to pay at least 33% of outcomes payments including the values of QALY gains in short term equal to nearly £6,600 per QALY, then the SIB model can be feasible.

Figure 6: Senario A of SIB contract, sensitivity analysis of net benefit of QALYs gain in short term

Source: (Marash et al., 2011)

The quality of life benefits related to health services are the majority of outcomes and benefits so the willingness of a health commissioner to pay for QALY gains define the feasibility of a SIB.

However, external investment could also bring advantages: providing more flexible funding and stimulating greater rigour in the delivery of outcomes.

4.1.3 Cost

The cost of Be Active program for each person is £33.8 per year. This was computed by dividing the total cost of £4.7m, by the number of Be Active participants 139,000 (Leisure card data). It was assumed that the participants will continue with Be Active for 5 years. The total cost per each person after discounting was computed to be £158.0. So the aggregate cost by considering 130,000 populations was £22.0m.

4.1.4 Benefits

Benefits of Be Active are health care cost savings, health-related quality of life or QALY gains, productivity gains and subjective well-being gains or SWB.

The two ways of health care cost savings:

> ***Immediate health benefits***. It was stated that decrease in utilization of health care services gained from the increase in physical activity. According to HSE (1999) survey data shows the impact of physical activity for different parameters like age, ethnicity, sex, education, employment status and income associated with annual GP visit. Each PG visit cost is computed according to resource use costs of PSSRU (2009).
>
> ***Short- and long-term health benefits***. Avoidance of some contracted disease and in result reduction of health care services utilize data was achieved from

research that implemented by Matrix (2010). Also this research prepared data and calculate the possibility of increasing healthiness in compact of quitting smoking and cost savings associated with this gain.

For health- related quality of life or QALY there are two routes also:

Immediate health benefits. Data derived from YHEC (2007) for the immediate health benefits gained through increase in physical activity and quitting smoking.

Short- and long-term health benefits. Again this data is derived from Matrix (2010) on avoidance of some contract disease and results in quality of life gains including long and healthy life expectancy and decrease in morbidity long. Also the data related to increased possibility of long healthy life due to quitting smoking was gained from Matrix (2010). In monetary term, QALY or the quality of life gains valued using NICE that the lower range values £20,000.

Productivity gains declared as reduction in absenteeism in Short- and long-term are computed on the basis of the following data:

As the estimates 46% of people gain the productivity gains. This estimate was computed based on Birmingham employment rate (Birmingham Economy, 2011; ONS, 2011) adjusted for the over 65 years old proportion of Be Active users (Birmingham University, 2010).

Again according to the estimates and based on an average wage rate and absenteeism (the number of days), £499 would be an average of yearly productivity gain (Matrix, 2010).

And £364 would be the annual productivity gain from quitting smoking (Matrix, 2010).

The benefit of SWB or subjective well-being gains was computed using the following method:

Analyzing the relationship between being an active user of a sport center and the satisfaction of life was based on panel data from The British Household Panel Survey (BHPS). According to the estimates life satisfaction would increase by 0.041 points by being an active user of a sport center (on a scale 0 to x1). The coefficient was 95% level significant statistically.

However the method of valuing SWB gains as a monetary gain of being an active user of a sport center was not accepted. Some of the empirical and theoretical issues were discussed by Dolan et al (2011).

Now if the health authority through a SIB contract were agree on analysis the outcomes of Be Active in a period of 15 years or longer and even toke in their contract the cost savings of health related quality of life gains, productivity gains and subjective well-being gains, in addition to immediate health benefits, if they focus on long term cost savings instead of short term benefits, then Be Active program would be a so effective SIB program and besides all its benefits for society it would bring a good profits for investors, and government would gain a meaningful cost savings. As it shows in the cost benefit analysis below:

Table 6: Cost benefit analysis of Be Active, including all cost savings and productivity gains by stakeholder and timeframe

Return on investment metric	Stakeholder					
	Total	Local NHS		Local authority	HM Treasury	Employers
		Primary care	Secondary care			
Net benefit per person (in £)						
Short- term	**-50.23**	-38.46	-82.27	-23.70	14.15	94.19
Medium-term	**69.79**	-18.25	-34.34	-23.70	21.94	146.08
Lifetime	**489.21**	78.53	137.89	-23.70	44.53	296.50
Total net benefit (in £m)						
Short- term	**-6.98**	-5.35	-11.43	-3.29	1.97	13.09
Medium-term	**9.70**	-2.54	-4.77	-3.29	3.05	20.31
Lifetime	**68.00**	10.92	19.17	-3.29	6.19	41.21
Benefit-cost ratio						
Short- term	**0.68**	0.17	0.06	0.00	-	-
Medium-term	**1.44**	0.61	0.61	0.00	-	-
Lifetime	**4.10**	2.69	2.57	0.00	-	-
Cost per QALY (in £)	-	-	-	-	-	-

Table 7: Cost benefit analysis of Be Active

Return on investment metric	Stakeholder					
	Total	Local NHS		Local authority	HM Treasury	Employers
		Primary care	Secondary care			
Net benefit per person (in £)						
Short- term	**416.50**	159.33	186.68	31.16	14.15	94.19
Medium-term	**218.50**	33.35	62.77	-23.70	21.94	146.08
Lifetime	**3,202.75**	1,055.95	1,874.00	31.16	44.53	296.50
Total net benefit (in £m)						
Short- term	**57.89**	22.15	25.95	4.33	1.97	13.09
Medium-term	**30.37**	4.64	8.72	-3.29	3.05	20.31
Lifetime	**445.18**	146.78	260.49	4.33	6.19	41.21
Benefit-cost ratio						
Short- term	**3.64**	4.42	3.13	2.31	-	-
Medium-term	**2.38**	1.72	1.72	0.00	-	-
Lifetime	**21.27**	23.66	22.37	2.31	-	-
Cost per QALY (in £)	**1,165**	954	1,010	8,640	-	-

4.2 Wyman Teen Outreach Program (TOP)

Wyman Center's Teen Outreach Program (TOP) proposed a basic social impact bond (SIB), for use in urban teen populations. The main aim of implementing this project is to train teenagers and give them prepare knowledges and skills to go through their life wisely and by being aware of the results of their behavior and life styles that would decrease the probability of being pregnant in early teen ages. In addition of this short term benefits in individuals life in long term these skills will decrease the crime rate in society, increase the likely hood of higher education and better job opportunities in their future life and this can decrease the unemployment rate and increase the governments' tax revenue (Nonprofit Finance Fund, 2012).

In this program the master students of social work held 45 to 60 minute lesson per week, as for-credit of their master program and/or for pay (McBride, 2014).

Like other SIBs, this SIB concentrated on the private and philanthropic investors and public sectors in high income, interventions and measurable social benefits that create cost savings for governments and taxpayers. Wyman's TOP is an evidence-based and effective project to prevent teen pregnancy. The results gain from evaluation of TOP showed that when the project is completed at the end of a school year, female students who participated in this program were less likely to report a pregnancy and quit school.

Chicago public School used the Top model reaching 9000 students studying in 9^{th} grade. 40 target schools were included in each year. Through this program, they tried

to improve the teens' life skills, health behaviors and participation in social communities.

In the cost benefit analysis of TOP program there are two main components: first the cost of implementing the program and second the savings related to the benefits from program. Figure below shows some cost assumptions related to TOP model:

Table 8: Cost assumptions of TOP program

		Year 1	Year 2	Year 3	Year 4		Notes
# of youth		1000	1000	1000	1000		
# of females	50%	500	500	500	500		
# of males	50%	500	500	500	500		
youth per club		20	20	20	20		
# of clubs		50	50	50	50		
Wyman Franchise Costs							
Coordinator salary	$50,000						
# of coordinators (cummulative)		1.0	1.0	1.0	1.0	1.0	
How many months prior will you hire coordinator?	3						
Trainer salary	$35,000						
# trainers (cummulative)		1.0	1.0	1.0	1.0	1.0	
Cost of training the trainer / coordinator	$ 2,000						5 day trainer per diem. Flight $750. Hotel 150 per night. Perdiem $100 per day (first year and then every 4 years)
Partner cost of facilitator training	$ 1,500						Assumption for food, renting space etc. $500 per day for 4 days
Coordinator Travel / club	$ 500						Assumes local travel by car
Outcome reporting cost / club	$ 100						5 hours per club. Pay someone $20 / hour
Misc. support / club	$ 500						
Partner OH %	10%						
Wyman start-up fee	$26,000						
<50 clubs	$ 6,000						
Incremental 10 clubs	$ 1,000						
Execution costs / Provider costs							
Facilitator salary / club	$45,000						Full time - change to hourly facilitators if
# of facilitators (cummulative)		3.4	3.4	3.4	3.4	3.4	
Incremental cost of curriculum	$500	0	0	0	0	0	
(one set per facilitator)							
Community service cost / club	$ 2,000						Travel to community service (transportation, insurance, multiple trips of ~10 students a year)
Misc. (food, supplies, logistics etc.) / club	$ 2,000						
Other Evaluation		$200,000	$100,000	$100,000	$100,000	$200,000	
Additional Services			$165,095	$165,095	$165,095	$ 65,095	
OH %	5%						Paperwork, recuiting

In this study the focus is on the medical costs savings related to prevented pregnancy. Besides the benefits of decreasing pregnancy risk, TOP program has other results like decreasing crime rate, increasing enrollment in higher education, more job opportunities and increasing the future tax revenue although it is not easy to quantify the dollar savings of these positive results.

Because of SIB structure organized for short term, this program measured the results for short term, 5 to 10 years. Due to the fact that the long term results can't be quantified in this project, the easiest costs that can be directly quantified in the TOP program are medical savings.

There are three layers of savings based on inflation-adjusted rates that were used from Thomas paper. In the first year of TOP treatment (year2), there is $1,776 savings related to preventing of prenatal care costs, delivery and postpartum care costs per each birth. Additionally, there are extra savings for infant medical care costs per each birth, amounting to $2,403. And in the end, four years of children's expenditure per each year amounting to $4,179. In figure below is shown the timeline of all dollar savings of medical care in TOP program.

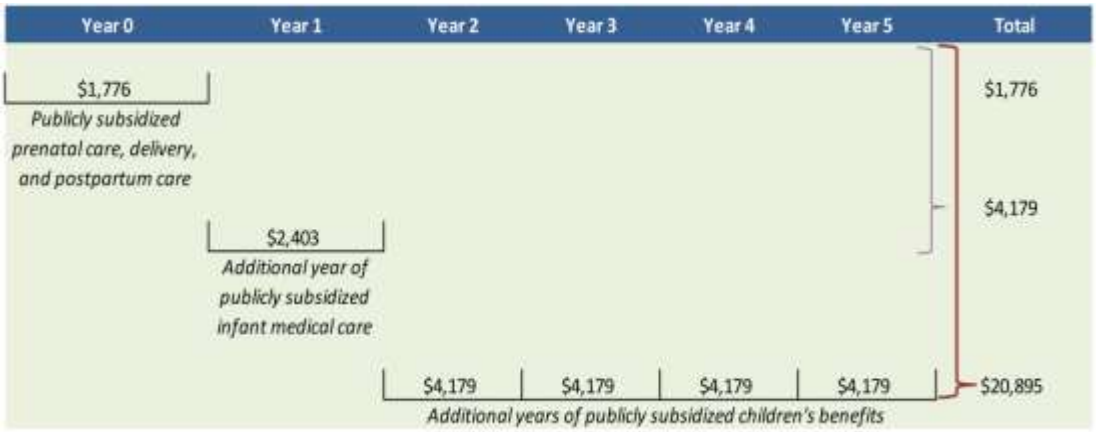

Figure 7: Timeline of all dollar savings of TOP program

In TOP program the rate of reduction in teen birth was calculated at 45%, and the average of Chicago teen pregnancy rate was 6% for females. By assuming that TOP doesn't have any effect on live birth, the total bond issued in TOP program was 4 million dollars.

Table 9: Other assumptions of TOP program

Total Bond Issuance	$4,000,000		Source
Dealmaker Fee (IFF)	1.75%		
Independent Assessor (includes control group studies)	1.0%		
Persistence	0%		
Fidelity	100%		Wyman
Reduction in birth rate	45%		Wyman
Chicago teenage birth rate (ages 15-19)	6.0%		"A Profile of Health and Health Resources within Chicago's 77 Community Areas", Yonek and Hasnain-Wynia, 2011
2008-2011 CPI change	4.48%		US Department of Labor, Bureau of Labor Statistics
State and local savings proportion	55%		"The Public Costs of Teen Childbearing in Illinois in 2008", National Campaign, June 2011
Federal savings proportion	45%		"The Public Costs of Teen Childbearing in Illinois in 2008", National Campaign, June 2011

In this Program there are 4 groups and 1,000 students in each group and each group needs to have a similar sample group. The total number of students in this SIB would be 8,000 in the length of a 4 year program. The average cost per each student will be $964 in the first year, 907 in the second year to forth years and $305 in the last (fifth) year. This cost contains the 1.75% and 1% for independent assessor cost. The below figure shows the details of costs analysis:

Table 10: Top program's cost analysis

	Start-up Costs	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
COSTS											
Wyman Franchise Costs											
Wyman start-up fee	$ 26,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Wyman annual fee		$ 6,000	$ 6,000	$ 6,000	$ 6,000	$ -	$ -	$ -	$ -	$ -	$ -
Coordinator Salary	$ 12,500	$ 50,000	$ 50,000	$ 50,000	$ 50,000	$ -	$ -	$ -	$ -	$ -	$ -
Trainer Salary	$ 8,750	$ 35,000	$ 35,000	$ 35,000	$ 35,000	$ -	$ -	$ -	$ -	$ -	$ -
Cost of training coordinator/trainer	$ 2,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Cost of facilitaor training	$ 750	$ 750	$ 750	$ 750	$ 750	$ -	$ -	$ -	$ -	$ -	$ -
Coordinator Travel		$ 25,000	$ 25,000	$ 25,000	$ 25,000	$ -	$ -	$ -	$ -	$ -	$ -
Outcome reporting cost		$ 5,000	$ 5,000	$ 5,000	$ 5,000	$ -	$ -	$ -	$ -	$ -	$ -
Misc. support		$ 25,000	$ 25,000	$ 25,000	$ 25,000	$ -	$ -	$ -	$ -	$ -	$ -
Other OH	$ 2,400.00	$ 14,075	$ 14,075	$ 14,075	$ 14,075	$ -	$ -	$ -	$ -	$ -	$ -
Total Wyman Franchise Costs	$ 52,400.00	$160,825	$160,825	$160,825	$160,825	$ -	$ -	$ -	$ -	$ -	$ -
Provider Costs											
Facilitator Salary	$ 38,250	$153,000	$153,000	$153,000	$153,000	$ -	$ -	$ -	$ -	$ -	$ -
Community Service		$100,000	$100,000	$100,000	$100,000	$ -	$ -	$ -	$ -	$ -	$ -
Misc. program execution		$100,000	$100,000	$100,000	$100,000	$ -	$ -	$ -	$ -	$ -	$ -
Evaluation		$200,000	$100,000	$100,000	$100,000	$200,000	$ -	$ -	$ -	$ -	$ -
Provider OH	$ 1,913	$ 17,650	$ 17,650	$ 17,650	$ 17,650	$ -	$ -	$ -	$ -	$ -	$ -
Additional Services		$ -	$165,095	$165,095	$165,095	$ 65,095	$ -	$ -	$ -	$ -	$ -
Total Provider Costs	$ 40,163	$570,650	$635,745	$635,745	$635,745	$265,095	$ -	$ -	$ -	$ -	$ -
Dealmaker Costs (IFF)	$ 70,000	$ 70,000	$ 70,000	$ 70,000	$ 70,000	$ -	$ -	$ -	$ -	$ -	$ -
Independent Assessor	$ -	$ -	$ 40,000	$ 40,000	$ 40,000	$ 40,000	$ -	$ -	$ -	$ -	$ -
Total Costs	**$ 162,563**	**$801,475**	**$906,570**	**$906,570**	**$906,570**	**$305,095**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Cost per youth		**$ 964**	**$ 907**	**$ 907**	**$ 907**	**$ 305**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**

(Source: Dao, V. 2012)

This study assumes that every student uses the medical care, and decrease in birthrate will cause the government to have cost savings from the decline in medical expenses. There are three levels of benefits in this birth rate decline. When comparing with a sample group where the persistence factor is 0%, the teen birth rate shows 45% decline through TOP program in its first year. A full detailed savings analysis is shown in the following table.

As it shows the total public savings for each student is between $24 in second year and $226 in the 7th year. Then we split these savings to federal and state savings, it shows that all the benefits do not accrue just for one branch of government. It is important to pay attention to this point that the total public savings, the range between $24 and $226 per each student, would be much lower than the actual savings on Wyman's contracts. There is also savings/cost ratio for federal and state and also public savings. As it is showed in the below figure for the year 2 the

savings/cost ratio is just 3%. In the other words, It is obvious that the savings generate in each year is just a tiny portion of the cost.

Table 11: TOP program's saving analysis

	Start-up Costs	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
SAVINGS											
Average Number of Births in Chicago (6%)		-	30	60	90	120	-	-			
Decrease in Number of Births (0% Persistence)		-	14	14	14	14	-	-	-	-	-
0% Persistence											
Total Public Savings (per birth)											
Prenatal care, delivery, and postpartum care		$ -	$ 1,776	$ 1,776	$ 1,776	$ 1,776	$ -	$ -	$ -	$ -	$ -
Additional 1 year's worth of publicly subsidized infant medical care		$ -	$ -	$ 2,403	$ 2,403	$ 2,403	$ 2,403	$ -	$ -	$ -	$ -
Additional 5 years' worth of publicly subsidized children's benefits		$ -	$ -	$ -	$ 4,179	$ 4,179	$ 4,179	$ 4,179	$ -	$ -	$ -
Total Public Savings (per birth)		$ -	$ 1,776	$ 4,179	$ 8,358	$ 8,358	$ 6,582	$ 4,179	$ -	$ -	$ -
Total Public Savings (overall)											
Prenatal care, delivery, and postpartum care		$ -	$ 23,977	$ 23,977	$ 23,977	$ 23,977	$ -	$ -	$ -	$ -	$ -
Additional 1 year's worth ofpublicly subsidized infant medical care		$ -	$ -	$ 32,440	$ 32,440	$ 32,440	$ 32,440	$ -	$ -	$ -	$ -
Additional 5 years' worth of publicly subsidized children's benefits (Cohort 1)		$ -	$ -	$ -	$ 56,417	$ 56,417	$ 56,417	$ 56,417	$ -	$ -	$ -
Additional 5 years' worth of publicly subsidized children's benefits (Cohort 2)		$ -	$ -	$ -	$ -	$ 56,417	$ 56,417	$ 56,417	$ 56,417	$ -	$ -
Additional 5 years' worth of publicly subsidized children's benefits (Cohort 3)		$ -	$ -	$ -	$ -	$ -	$ 56,417	$ 56,417	$ 56,417	$ 56,417	$ -
Additional 5 years' worth of publicly subsidized children's benefits (Cohort 4)		$ -	$ -	$ -	$ -	$ -	$ -	$ 56,417	$ 56,417	$ 56,417	$ 56,417
Total Public Savings (overall)		$ -	$ 23,977	$ 56,417	$112,834	$169,250	$201,690	$225,667	$169,250	$112,834	$ 56,417
State and Local Savings (55%)											
Prenatal care, delivery, and postpartum care		$ -	$ 13,187	$ 13,187	$ 13,187	$ 13,187	$ -	$ -	$ -	$ -	$ -
Additional 1 year's worth ofpublicly subsidized infant medical care		$ -	$ -	$ 17,842	$ 17,842	$ 17,842	$ 17,842	$ -	$ -	$ -	$ -
Additional 5 years' worth of publicly subsidized children's benefits (Cohort 1)		$ -	$ -	$ -	$ 31,029	$ 31,029	$ 31,029	$ 31,029	$ -	$ -	$ -
Additional 5 years' worth of publicly subsidized children's benefits (Cohort 2)		$ -	$ -	$ -	$ -	$ 31,029	$ 31,029	$ 31,029	$ 31,029	$ -	$ -
Additional 5 years' worth of publicly subsidized children's benefits (Cohort 3)		$ -	$ -	$ -	$ -	$ -	$ 31,029	$ 31,029	$ 31,029	$ 31,029	$ -
Additional 5 years' worth of publicly subsidized children's benefits (Cohort 4)		$ -	$ -	$ -	$ -	$ -	$ -	$ 31,029	$ 31,029	$ 31,029	$ 31,029
Total State and Local Savings (55%)		$ -	$ 13,187	$ 31,029	$ 62,058	$ 93,088	$110,930	$124,117	$ 93,088	$ 62,058	$ 31,029
Federal Savings (45%)											
Prenatal care, delivery, and postpartum care		$ -	$ 10,790	$ 10,790	$ 10,790	$ 10,790	$ -	$ -	$ -	$ -	$ -
Additional 1 year's worth ofpublicly subsidized infant medical care		$ -	$ -	$ 14,598	$ 14,598	$ 14,598	$ 14,598	$ -	$ -	$ -	$ -
Additional 5 years' worth of publicly subsidized children's benefits (Cohort 1)		$ -	$ -	$ -	$ 25,388	$ 25,388	$ 25,388	$ 25,388	$ -	$ -	$ -
Additional 5 years' worth of publicly subsidized children's benefits (Cohort 2)		$ -	$ -	$ -	$ -	$ 25,388	$ 25,388	$ 25,388	$ 25,388	$ -	$ -
Additional 5 years' worth of publicly subsidized children's benefits (Cohort 3)		$ -	$ -	$ -	$ -	$ -	$ 25,388	$ 25,388	$ 25,388	$ 25,388	$ -
Additional 5 years' worth of publicly subsidized children's benefits (Cohort 4)		$ -	$ -	$ -	$ -	$ -	$ -	$ 25,388	$ 25,388	$ 25,388	$ 25,388
Total Federal Savings (45%)		$ -	$ 10,790	$ 25,388	$ 50,775	$ 76,163	$ 90,761	$101,550	$ 76,163	$ 50,775	$ 25,388
Total Public Savings		**$ -**	**$ 23,977**	**$ 56,417**	**$112,834**	**$169,250**	**$201,690**	**$225,667**	**$169,250**	**$112,834**	**$ 56,417**
Total Public Savings per Youth		**$ -**	**$ 24**	**$ 56**	**$ 113**	**$ 169**	**$ 202**	**$ 226**	**$ 169**	**$ 113**	**$ 56**
State and Local Savings		**$ -**	**$ 13,187**	**$ 31,029**	**$ 62,058**	**$ 93,088**	**$110,930**	**$124,117**	**$ 93,088**	**$ 62,058**	**$ 31,029**
State and Local Savings per Youth		**$ -**	**$ 13**	**$ 31**	**$ 62**	**$ 93**	**$ 111**	**$ 124**	**$ 93**	**$ 62**	**$ 31**
Federal Savings		**$ -**	**$ 10,790**	**$ 25,388**	**$ 50,775**	**$ 76,163**	**$ 90,761**	**$101,550**	**$ 76,163**	**$ 50,775**	**$ 25,388**
Federal Savings per Youth		**$ -**	**$ 11**	**$ 25**	**$ 51**	**$ 76**	**$ 91**	**$ 102**	**$ 76**	**$ 51**	**$ 25**
Total Public Savings/Costs Ratio		**-**	**0.03**	**0.06**	**0.12**	**0.55**	**NA**	**NA**	**NA**	**NA**	**NA**
State and Local Savings/Costs Ratio		**-**	**0.01**	**0.03**	**0.07**	**0.31**	**NA**	**NA**	**NA**	**NA**	**NA**
Federal Savings/Costs Ratio		**-**	**0.01**	**0.03**	**0.06**	**0.25**	**NA**	**NA**	**NA**	**NA**	**NA**

To better understand the concept there are two figures that show the cash flow and returns through these years of TOP operations. In the figure below there is graph that shows the annual and cumulative cash flows for these 10 years. As it demonstrates in the first four years, the net cash flow is negative because of high costs of start-up and running the TOP. Eventually the cash flow becomes positive in year 6 while the

cumulative cash flow stays negative in all of the TOP programs implementation through these 10 years. This is a critical point that says the savings generated over the life of TOP program is not enough to cover its costs.

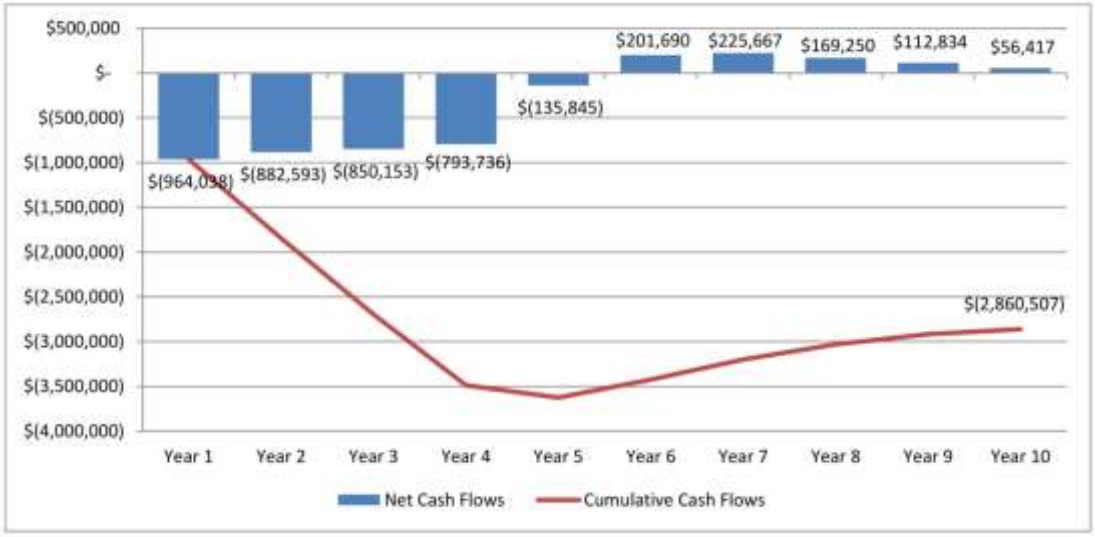

Figure 8: Top program's net and cumulative cash flows

For calculating the real return to investors the internal rate of return (IRR) is needed. The figure below shows the annualized IRR for each year for the federal, state and public government. As it demonstrates for all parties, in every period of TOP program, the IRR for investors is negative.

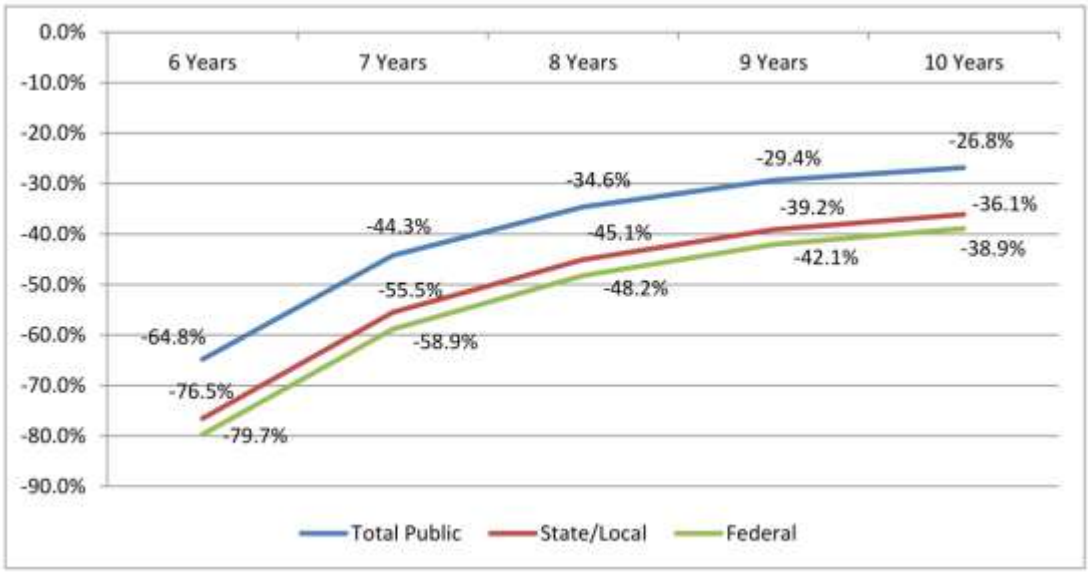

Figure 9: IRR of TOP program over different time periods

Due to these analyses, savings of TOP program is not enough to cover its cost and original principal of $4 million. It is obvious that Wyman Teen Outreach program can not be a feasible Social Impact Bond.

4.2.1 Sensitivity Analysis

To achieve a possible SIB, we can change some assumptions to gain feasible results. The savings benefits are sensitive to three factors: persistence factor, decrease in teen birth rate and the average of Chicago teen birth rate. Varying any of these factors will change the cash flows and returns to IRR.

Persistence	Risk Reduction	Teen Birth Rate
0%	35%	12%
25%	45%	10%
50%	55%	8%
75%	65%	6%
100%	75%	4%

Figure 10: TOP program sensitivity analysis

As the rate of persistence increases, the savings increase as well. This happens because of the effect of TOP lasts longer and the 53% decline in teen pregnancy risk lasts beyond one year.

Table 12: Sensitivity analysis

	Start-up Costs	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
SAVINGS											
Average Number of Births in Chicago (6%)		-	30	60	90	120	-	-			
Decrease in Number of Births (0% Persistence)		-	14	14	14	14	-	-	-	-	-
Decrease in Number of Births (25% Persistence)		-	14	17	18	18	-	-	-	-	
Decrease in Number of Births (50% Persistence)		-	14	20	24	25	-	-	-	-	
Decrease in Number of Births (75% Persistence)		-	14	24	31	37	-	-	-	-	
Decrease in Number of Births (100% Persistence)		-	14	27	41	54	-	-	-	-	
25% Persistence											
Total Public Savings (overall)		$ -	$ 23,977	$ 62,411	$128,436	$201,359	$244,069	$275,913	$219,497	$148,976	$ 74,929
Total State and Local Savings (55%)		$ -	$ 13,187	$ 34,326	$ 70,640	$110,748	$134,238	$151,752	$120,723	$ 81,937	$ 41,211
Total Federal Savings (45%)		$ -	$ 10,790	$ 28,085	$ 57,796	$ 90,612	$109,831	$124,161	$ 98,773	$ 67,039	$ 33,718
50% Persistence											
Total Public Savings (overall)		$ -	$ 23,977	$ 68,405	$147,036	$242,769	$300,596	$345,553	$289,136	$204,511	$105,781
Total State and Local Savings (55%)		$ -	$ 13,187	$ 37,623	$ 80,870	$133,523	$165,328	$190,054	$159,025	$112,481	$ 58,180
Total Federal Savings (45%)		$ -	$ 10,790	$ 30,782	$ 66,166	$109,246	$135,268	$155,499	$130,111	$ 92,030	$ 47,602
75% Persistence											
Total Public Savings (overall)		$ -	$ 23,977	$ 74,400	$168,633	$295,725	$374,312	$439,875	$383,458	$284,729	$154,265
Total State and Local Savings (55%)		$ -	$ 13,187	$ 40,920	$ 92,748	$162,649	$205,872	$241,931	$210,902	$156,601	$ 84,846
Total Federal Savings (45%)		$ -	$ 10,790	$ 33,480	$ 75,885	$133,076	$168,441	$197,944	$172,556	$128,128	$ 69,419
100% Persistence											
Total Public Savings (overall)		$ -	$ 23,977	$ 80,394	$193,228	$362,478	$468,259	$564,168	$507,751	$394,918	$225,667
Total State and Local Savings (55%)		$ -	$ 13,187	$ 44,217	$106,275	$199,363	$257,543	$310,292	$279,263	$217,205	$124,117
Total Federal Savings (45%)		$ -	$ 10,790	$ 36,177	$ 86,952	$163,115	$210,717	$253,876	$228,488	$177,713	$101,550

Calculating the IRR over seven years under different conditions gives the result below:

		REDUCTION IN BIRTH RATE				
		35%	**45%**	**55%**	**65%**	**75%**
PERSISTENCE	**0%**	-49.3%	-44.3%	-40.0%	-36.2%	-32.8%
	25%	-45.5%	-40.2%	-35.7%	-31.8%	-28.2%
	50%	-41.2%	-35.6%	-30.9%	-26.7%	-22.9%
	75%	-36.3%	-30.5%	-25.4%	-21.0%	-17.1%
	100%	-31.1%	-24.9%	-19.6%	-15.0%	-10.9%

Figure 11: Sensitivity analysis

This figure compares the persistence factors to the decline rate of teen birth.

		REDUCTION IN BIRTH RATE				
		35%	45%	55%	65%	75%
TEEN BIRTH RATE	12%	-34.5%	-28.2%	-22.9%	-18.1%	-13.8%
	10%	-38.7%	-32.8%	-27.7%	-23.3%	-19.2%
	8%	-43.5%	-38.0%	-33.3%	-29.2%	-25.4%
	6%	-49.3%	-44.3%	-40.0%	-36.2%	-32.8%
	4%	-56.5%	-52.1%	-48.4%	-45.0%	-42.0%

Figure 12: Sensitivity analysis

This figure compares the average Chicago teen birth rate to the decline in teen birth in TOP program. The pale percentages show the IRR in the base case of 0% persistence, 6% Chicago birth rate and 45% reduction in birth rate. The more savings are expected from TOP program while the persistence rate and the average Chicago birth rate are higher. But even in the higher circumstances of these two factors again the IRR is negative. According all these analysis, there is not any possibility for Wyman TOP program to be implemented as a SIB and produces meaningful savings even through there are several positive results through these programs for society, but the dollar savings are not enough to cover the original principle and generate returns for investors.

Chapter 5

CONCLUSION

Due to inefficiency of government programs and the inability of public sector to finance viable projects, Social Impact Bond investments would be a handful tool for governments. Private sector investment in SIBs would not only be able to help public programs to work but also would be able to scale these programs to a level where they are serving a part of population which previously has not received services.

Social Impact Bond is employed to overcome social public affairs and using social innovation to have higher effective outcomes. This new financial tool brings the focus on measurement of outcomes and partnership between local and state government and nonprofit investors to transfer the risk and prepare sufficient capital to expand invention operations with rapid and rigorous developed evidence. This study discussed two case studies in order to measure the effectiveness of SIB system: Be Active and TOP.

In case of Be Active, it is shown that by conducting an economic analysis of Be Active, it is obvious that this program is a cost-effective program and it uses the public resources efficiently. However, it is obvious that there would be few benefits to implementing the program through SIB since only a small fraction of the public sector benefits from this program. In addition, inadequate cost savings are realized to afford the SIB payments over the lifetime of the investment. The key words for Be Active SIB to be feasible are QALY gains, productivity gains and secondary or long term health benefits. Again in long term there would be benefits related to decline in likelihood of suffering of different diseases that cause from lack of physical activities or smoking. Prevention of these diseases would bring other cost savings for health services including the physicians meeting costs, drug and treatment cost and savings from decline in using of medical equipments and their amortization costs.

The failure or successfulness of SIB is mostly depend on the evaluator of projects that assess every single benefits in consider and measure the values of those benefits in monetary term in right time scale.

In case of TOP program, it is indicated that financing this program by a Social Impact Bond is not feasible. There are some structural and institutional obstacles to implement this program with a Social Impact Bond theme. In addition, this program only has taken into account the short-term medical expenses and has neglected the long-term benefits from fewer teenage births which are difficult to quantify.

Social Impact Bonds are new innovative tool but they are associated with some challenges. Firstly, feasibility analyses would require to be strengthened more by continual efforts to ensure program fidelity. Secondly, there is currently no structure

in place to create legislations for SIB framework. So, there is a need to push for state legislation to create proper SIB frameworks. Thirdly, in order to improve the utilization of SIBs, it is highly required to address barriers to investments to make SIB investments more attractive to a higher proportion of potential investors.

So, we can conclude that although there would be some opportunities to introduce some outcome-based financing systems, there would seem to be little benefit in transferring implementation risk around this core activity.

REFERENCES

[1] Azemati, H., Belinsky, M., Gillette, R., Liebman, J., Sellman, A., & Wyse, A. (2013). Social impact bonds: lessons learned so far. *Community Development Investment Review*, 23-33.

[2] Callanan, L., & Law, J. (2012). Will Social Impact Bonds Work in the United States? *Washington DC: McKinsey on Society*. http://mckinseyonsociety.com/downloads/reports/Social-Innovation/Social-impact-bonds.pdf

[3] Center for Global Development. (2014). Assessing the Impacts of Service Learning on Middle School Students: Wyman's Teen Outreach Program. http://csd.wustl.edu/Publications/Documents/RR14-09.pdf

[4] Centre for Social Impact Bonds. (2013). Ministry of Justice: Offenders Released from Peterborough Prison. Retrieved from http://data.gov.uk/sib_knowledge_box/ministryjustice-offenders-released-peterborough-prison

[5] Dermine, T. (2013). Establishing Social Impact Bonds in Continental Europe.

[6] Disley, E., Rubin, J., & Europe, R. A. N. D. (2014). Phase II Report from the Payment by Results Social Impact Bond pilot at HMP Peterborough.

[7] Dao, V. (2012). Social Impact Bond: feasibility analysis of the Wyman Teen Outreach Program (Doctoral dissertation, University of Chicago).

[8] Hansbrough, M. (2014). Social Impact Bonds: An Explanation, an Application and Cautions.

[9] Health Survey of England (1999). The Health of Ethnic Groups. The Department of Health.

[10] Humphries, K. W. (2014). Not Your Older Brother's Bonds: The Use and Regulation of Social-Impact Bonds in the United States. *Law and Contemporary Problems*. *76*(3), 433-452.

[11] Jackson, E. T. (2013). Evaluating Social Impact Bonds: Questions, Challenges, Innovations, and Possibilities in Measuring Outcomes on Investing. Community Development. 44(5), 608-616.

[12] Langford, A. R. (2011). Social Impact Bonds in Canada: From Theory to Implementation.

[13] Liebman, J., & Sellman, A. (2013). Social Impact Bonds: A Guide for State and Local Governments. *Cambridge, MA: Harvard Kennedy School Social Impact Bond Technical Assistance Lab*.

[14] Malcolmson, J. D. (2014). Social Impact Bonds: Cleared for Landing in British Columbia.

[15] Marsh, K., Bertranou, E., & Samanta, K. (2011). Cost-Benefit Analysis and Social Impact Bond Feasibility Analysis for the Birmingham Be Active Scheme. *Matrix Evidence*.

[16] Mass. Gov: Administration and Finance. (2012). Massachusetts First State in the Nation to Announce Initial Successful Bidders Pay for Success Contracts. http://www.mass.gov/anf/press-releases/fy2013/massachusetts-first-state-in-the-nation-to-announce-ini.html

[17] Matrix (2011). Return on Investment and Cost Impact for Public Health Interventions. It was Commissioned by NICE, Study Number 433.

[18] Mosenson, S. H. (2013). New Models of Private Sector Financing of Not-for-Profit Corporations (Doctoral Dissertation, Northeastern University Boston).

[19] NHS South Birmingham (2011). Leisure Card data.

[20]Nonprofit Finance Fund (2012). "Pay for Success Initiative," http://nonprofitfinancefund.org/pay-for-success (Accessed June 2, 2012).

[21] Perakis, R. (2014). Centre for Global Development. (2014). Peterborough SIB Results Are in- What Do They Mean? Retrieved from http://www.cgdev.org/blog/peterborough-sib-results-are-%E2%80%93-what-do-

they-mean

[22] PSSRU (2009). Unit Costs of Health and Social Care 2009. Retrieved September 19, 2011, from: http://www.pssru.ac.uk/uc/uc2009contents.htm

[23] Roman, J. K., Walsh, K. A., Bieler, S., & Taxy, S. (2014). Five Steps to Pay for Success.

[24] Strickland, P. (2010). Social Impact Bonds-The Pilot at Peterborough Prison. Retrieved from http://www.parliament.uk/briefing-papers/SN05758

[25] U.S. Department of Labor. (2012). "Notice of Availability of Funds and Solicitation for grant applications for Pay for Success Pilot Projects." http://www.doleta.gov/grants/pdf/pfs_sga_dfa_py_11_13.pdf

[26] US SIF. (2010). US Social Investment Forum: Trends Report 2010. Report on Socially Responsible Investing Trends in the United States. http://www.ussif.org/files/Publications/10_Trends_Exec_Summary.pdf

[27] US SIF. (2014). US Social Investment Forum: Trends Report 2014. Report on US Sustainable, Responsible and Impact Investing Trends. http://www.ussif.org/Files/Publications/SIF_Trends_14.F.ES.pdf