Impact Bonds as Mechanisms of Job Creation

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Abstract.

This paper explores the role of impact bonds as mechanisms of job creation by introducing a novel theoretical framework that brings together concepts from general systems theory and the modern search and matching theory. First, through the proposed framework i identify the range of job creation strategies that can be followed inside the ecosystem that emerges with the implementation of an impact bond mechanism. Second, the concepts are further tested at an empirical front by relying on available data on all impact bonds with an employment focus in 20 countries. I find that in 89% of the ecosystems, jobs are created when a service provider, reallocates the beneficiaries inside the ecosystem to markets in which vacant jobs are stationed by tackling the binding factors that prevent them from meeting and producing together; skills mismatch (79%), coordination failure (17%) or spatial mismatch (4%). The results vary across ecosystems that reflect distinct international contexts. In ecosystems located in upper and lower middle income economies jobs are created purely by filling existing vacancies, a process regulated by a service provider that acts as a planner inside the ecosystem and controls the configuration of the beneficiaries across markets.

Keywords: impact bonds, employment impact bonds, ecosystem, search and matching process

1. Introduction

Impact bonds first emerged in UK after the 2008 crisis, as an innovative mechanism that could address complex social issues by bringing together multiple stakeholders through a results-based approach. Since their initial launch in September 2010 in the area of criminal justice in Peterborough to reduce reoffending rates among nonviolent offenders, the range of social issues that impact bonds have tackled has broadened to employment and training, child and family welfare, homelessness, health and education. The radius of action of impact bonds has also expanded beyond United Kingdom and Europe to include not only other high income countries such as United States and Canada but also countries belonging to low and middle income groups such as Kenya and Colombia.

Impact bonds are defined as "outcome-based contracts that incorporate the use of private funding from investors to cover the upfront capital required for a provider to set up and deliver a service" (Government Outcomes Lab, 2020). The service (that can consist of programmes with a proven track record of success or test innovation) aims to achieve measurable outcomes previously agreed on by stakeholders, which in turn determine whether

the investors are repaid by the outcome funder or the interest and part of the capital are lost (Goodall, 2014; OECD,2016).

Over the years, there have been increasing attempts in literature to provide theoretical and empirical background on impact bonds but current literature still remains modest with only a moderate number of works.

Based on the work of Fraser, Tan, Lagarde, and Mays (2018) and later Ormiston, Moran, Castellas and Tomkinson (2020) existing literature on impact bonds has mainly developed in three fronts, each emphasizing different aspects of impact bonds:

First, the public sector reform or impact driven front, according to which impact bonds are introduced as a mechanism that can improve the efficiency and efficacy of service provision in the public sector through private capital and generate fiscal savings through the shift towards preventive interventions that focus on outcomes instead of outputs (OECD, 2016; Arena, Bengo, Calderini and Chiodo, 2016). *Second,* the financial innovation front represented by Pauly and Swanson (2017); Tortorice, Bloom, Kirby and Regan (2020) in which impact bonds are treated as a novel funding mechanism that allocates additional private capital to address social issues and can work as an alternative to traditional debt finance. *Third,* the collaboration driven front in which impact bonds are considered as a mechanism that brings together multiple actors from public, private and non-profit sectors in ways that benefit all parties involved, a "triple win" framing (OECD, 2016; Ormiston et al. , 2020).

This paper makes two important contributions to the existing literature on impact bonds:

First, it contributes to the collaboration and impact-driven literature by presenting a novel multi-stakeholder framework that incorporates concepts introduced by the General System Theory and as such can be used to analyse impact bond ecosystems.

Second, it provides the first contribution to the "employment impact bond" literature (impact bonds in the area of employment and training), by formalizing the notion of employment impact bonds and the mechanism that governs the job creation process, through the introduction of concepts from the modern search and matching theory of unemployment.

The next section introduces the theoretical framework. Section 3 conducts a simple exercise that tests the concepts on available data and conducts a comparative analysis on how the strategies on job creation vary across ecosystems and international contexts. Section 4 finally concludes.

2. The Theoretical Framework

In this section I introduce a novel theoretical framework that builds on concepts from the General Systems Theory (Bertalanffy, 1932, 1950, 1968; Katz and Kahn, 1966) and the Modern Search and Matching Theory of Unemployment (Mortensen and Pissarides, 1994; Pissarides, 2000). The framework follows a holistic systemic approach and attempts to provide an apparatus for analysing the ecosystems that emerge with the implementation of an impact bond mechanism and in the case of impact bonds that focus on employment, the process of job creation that takes place inside.

2.1 The Employment Impact Bond Ecosystem

Following Gustafsson-Wright et al (2015) survey on impact bonds and OECD (2016), an impact bond, in this case an impact bond in the area of employment and training or an employment impact bond as i will refer to in this paper, brings together several stakeholders that most often operate separately in pursuit of their objectives:

A government, seeking to provide employment for the population in need, while minimizing its risk exposure and achieving value-for-money.

Investors, private sector investors seeking blended value or double bottom line investments; *charities and foundations* looking to recycle capital (in the form of further grants) and scale employment impact.

A service provider, such as a social enterprise or a non-profit organization seeking to gain access to stable long-term capital that creates the opportunity for greater efficiency and effectivity in service delivery, enables the scaling of its operations or the testing of innovative interventions.

An intermediary, looking for an opportunity to test innovative financial models that can address social issues and achieve employment outcomes.

Firms looking for suitable employees that match the requirements of their vacancies and can fill them.

The population in need, unemployed or underemployed workers seeking to enter employment.

Among these stakeholders, a government, a service provider, an intermediary and investors "merge" together through an outcome-based contract in the pursuit of the same employment outcomes for the same beneficiaries as the end target. In this "merger", each stakeholder plays a different but complementary role:

The intermediary, the role or responsibilities of which can range from capital raising and deal structuring to financial model refinement, service provider contracting and performance management support depending on the model and structure of the impact bond (Goodall, 2014).

The service provider delivers a range of interventions: from training and skills development to employment services and entrepreneurship support and depending on the model and structure of the impact bond can also be responsible for performance management.

Investors provide upfront capital needed to fund the interventions.

The government issues the impact bond and pays back the capital and interest to the investors (ultimate outcomes payer).

In addition, *an evaluator* assesses whether the agreed employment outcomes have been achieved and the investors will be repaid.

In this regard, through an employment impact bond, a set of interrelated and interdependent entities that form an integrated whole intended to achieve measurable employment outcomes, emerges. Hence, based on Bertalanffy (1950) definition of systems, the implementation of an impact bond mechanism, creates a system that i call the Employment Impact Bond ecosystem (EiB ecosystem) in which each entity is both a whole, complete in itself and a part of the larger whole, the EiB ecosystem.

Definition 1. An EiB ecosystem is a set of interrelated and interdependent entities, usually an outcome payer, a service provider, an intermediary and investors that form an integrated whole intended to achieve measurable employment outcomes for the same beneficiaries as the end target.

This has two important implications:

First, following the "systems law" (see Bertalanffy,1932) the EIB ecosystem being a larger whole in which several entities interact, forming relationships and interdependence with each other, and taking into consideration that the behavior of a single autonomous entity differs from its behavior when it interacts with other entities, the properties and behavior of the system cannot be deduced by a summation of the properties and behavior of its composing parts when analyzed in isolation from the system.

Second, the EiB ecosystem being a composition of several entities and the relationships they form with each other, may display properties that its corresponding parts do not have on their own or behaviors which emerge only when the parts or entities interact in the wider whole. Hence, the implementation of an EIB mechanism creates a system that may result in more than the simple sum of its parts or entities, or in other words a synergy effect may be achieved.

In fact, the emergence of an EIB ecosystem introduces a change in the structure of incentives and as a result in behavior by putting an emphasis on the interactions and the interdependency of the composing entities. More specifically, by shifting the principal focus from inputs and outputs to outcomes (OECD, 2016) and tying the stakeholders to the same definition of success, what triggers the set of rewards (which differ among stakeholders, e.g. investors receive their capital and corresponding interest, the government generates fiscal savings) is not the set of inputs or activities but the achievement of the agreed outcomes which in itself depends on the interactions of all composing entities, Fig. 1.

In addition, following the set of relationships and interdependences that are formed between entities with the implementation of an employment impact bond mechanism (Fig. 1), some entities emerge as the core of the ecosystem and as such function as the decision-making structure that determines the functioning dynamics of the EiB ecosystem as a whole and the nature of interactions with other entities, present in the environment. An example of such a decision-making process would be the strategy that the EiB entity chooses in creating jobs, which in its turn determines whether there will be any interactions with the firms with open vacancies that operate in the environment.

In this regard, the EiB ecosystem apart from the internal interactions between its composing entities is also characterized by an external interaction with the environment. Hence, following Katz and Kahn (1966) open system framework, in particular the characteristics of an open system (1,2,3), the EiB ecosystem can be classified as an open system and as such can influence its environment. In addition, a question arises: How can the EiB ecosystem be characterized, what sets it apart from other systems in the environment?

First, based on (Skyttner, 2005, p.57) a system can be determined by the purpose for its existence which is also the starting point for measuring its success. In this case, the purpose of an EiB ecosystem is the achievement of measurable employment outcomes as previously agreed on by the composing entities. Hence, as a proxy of an EiB ecosystem purpose, the outcome metrics can be used.

Second, following (Skyttner, 2005, p. 59), a system can be characterized by its structure which determines how its composing entities are organized, the dynamics of their interactions, the interaction with the environment and the specific role each entity plays inside the ecosystem. The EiB ecosystem emerges with the implementation of an impact bond mechanism and as such its structure is determined by the contract structure (see Gustafsson-Wright et al, 2015). More specifically, as in Goodall (2014); Gustafsson-Wright et al (2015), based on the entity that holds the contract with the outcome payer i.e. the government, the EiB entity (the decision-making structure) can fall into three distinct categories:

Figure 1: The set of relationships and interdependence between the composing entities inside an EiB ecosystem
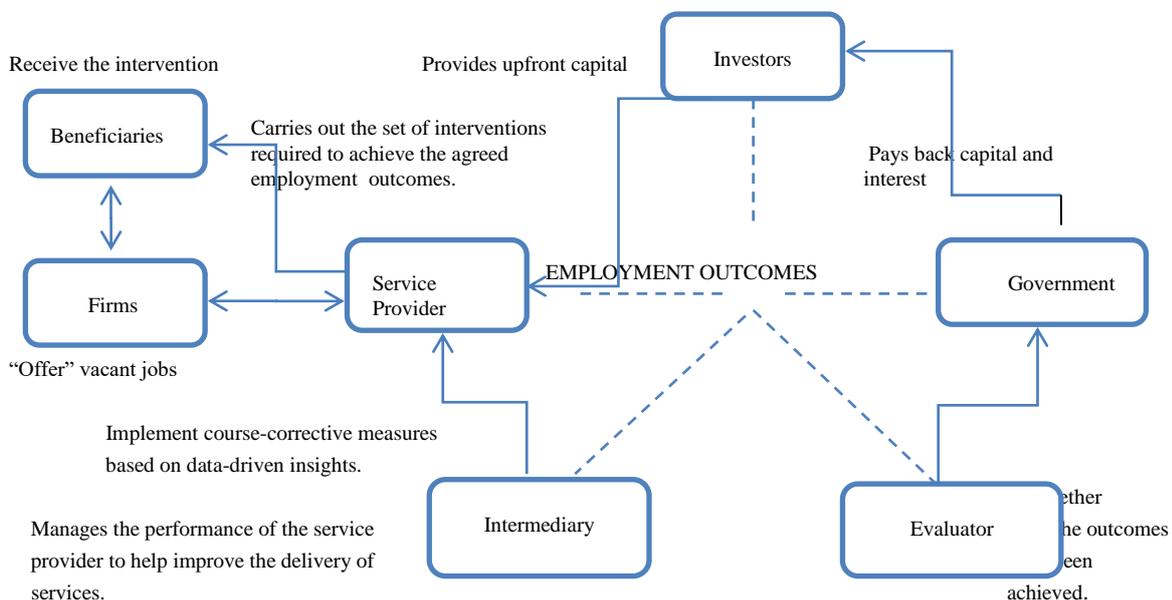
Source: The Author based on concepts outlined in OECD (2016); Note: The arrows point to the flow of interactions and interdependences between the composing entities of an EiB ecosystem not the flow of capital.

1) A managed EiB entity when the issued impact bond is characterized by a managed structure, with an intermediary or a majority intermediary-controlled Special Purpose Vehicle that holds the contract with the government and plays a central role in the negotiation process.

2) An intermediated EiB entity when the impact bond is characterized by an intermediated structure with the investors or a majority investor-controlled Special Purpose Vehicle holding the contract with the government. The intermediary, even in this case plays a major role throughout the negotiation process.
3) A direct EiB structure, in the case of a direct impact bonds structure in which a service provider holds the contract with a government and plays a more leading role in the process.

Third, based on (Skyttner, 2005, p.64) a system is determined by its boundaries that separate it from the environment and other systems, present in the environment. In this regard, as all other systems, the EiB ecosystem is bounded by time and space. Considering that the EiB ecosystem emerges with the implementation of an impact bond mechanism and its time span depends on that of the impact bond, the duration of the impact bond can be used as a proxy that characterizes the time boundary. Similarly, the locational boundary (in space), would depend on the locations where an EiB mechanism is being implemented (or in other words the radius of action of the EiB ecosystem), that can include a specific city, country or group of countries.

Apart from locational and time boundaries, in contrast to other systems, the EiB ecosystem can also be bounded by scale. The boundaries in scale are associated with the population in need that benefits from the emergence of an EiB ecosystem and the capital it is able to raise. In addition, as a proxy of the scale boundaries two indicators can be used: i) the number of the beneficiaries inside the ecosystem and ii) the raised capital.

2.2 The Job Creation process inside the Employment Impact Bond Ecosystem

Following Mortensen and Pissarides (1994), in a firm there are two states in which a job can potentially be, filled and producing or vacant and in search of a worker that can fill it, otherwise it gets destroyed. In order for the job creation process to take place and a match be formed, a firm with a vacant job and an unemployed worker need to meet and start production. In this regard, two issues arise: *First*, when is it possible for a firm with a vacancy and an unemployed worker to meet and begin producing? *Second*, how do they meet?

Each created job vacancy is stationed in a particular location and is characterized by a fixed irreversible technology and as such requires a specific set of skills to produce a unit of differentiated product when filled (Mortensen and Pissarides, 1994). Similarly, each unemployed worker is stationed in a particular location and is characterized by a specific skill level. In order for the unemployed worker and the firm with a vacancy to meet and the production process to take place, the characteristics of the unemployed e.g. geographical location, skill, must match the ones required by the vacant job.

In the case where the characteristics of unemployed workers are poorly matched with those of the vacancies and the unemployed are "stuck" in a geographic location or occupation in which vacant jobs are scarce, the rate at which they find a job is dependent on the rate at which they reskill or move to locations with vacancies, the rate at which new vacancies are

created in markets where unemployed are stationed and the rate at which the jobs that are actively producing and match the characteristics of the unemployed become vacant (Shimer , 2007).

Inside the EiB ecosystem, a service provider that acts as the operational representative of the EiB entity in the job creation process, through the implementation of interventions, can influence the configuration of beneficiaries across markets, the number of new vacancies created, but it exercises no influence over the rate at which currently filled jobs that match the characteristics of beneficiaries become vacant. In this regard, inside the EiB ecosystem, jobs are created either by reallocating currently unemployed beneficiaries to markets with existing vacant jobs or by creating new vacancies in markets where beneficiaries are located.

Definition 2. *The Vacancy Injection Channel* is a medium through which jobs are created by reallocating the targeted unemployed inside the EiB ecosystem to markets with existing vacant jobs by first addressing the binding factor that prevents the unemployed and firms with vacancies from meeting and producing together (skill, mobility). E.g. reallocate beneficiaries who previously had a job in a declining occupation to occupations in demand by equipping them with the required skill set that allows such transition.

Definition 3. *The Vacancy Generator Channel* is a medium through which new vacancies are created and filled inside the EIB ecosystem in markets where the targeted unemployed are located, by giving them access to resources- such as information, skills and/or microcredit- necessary for sustainable business creation. E.g. Create jobs through entrepreneurship when the unemployed are "stuck" in geographical locations where vacancies are currently scarce.

In order for an unemployed worker and a firm with a vacancy to meet and start producing, a search and matching process must take place first. In this regard, an issue of particular interest is the exchange process that brings the agents together, how is it organized? As in all markets, this exchange process can be decentralized, in the sense that the interactions between unemployed workers and firms with vacancies that pursue their interest and the outcomes of these interactions are determined by the market, competitive equilibrium. Alternatively, the process can also be centralized, when a benevolent social planner i.e. the government, looking to achieve the best results for all parties involved, makes all decisions on how to allocate unemployed workers across labor markets, how many employed workers to separate from their matches and the size of the labor force (see Sahin et al. (2014) for an interpretation of the planner's problem applied to labour markets).

Based on the extensive literature on search and matching models as summarized in the detailed surveys of Petrongolo and Pissarides (2001) ; Rogerson, Shimer and Wright (2005), when the exchange process that brings together unemployed workers and firms with vacancies is decentralized, there are two potential ways on how agents can meet. *First,* firms with vacancies that place advertisements, contact employment agencies, exploit local networks in search of a worker that can potentially fill the vacant job they have available, and on the other side unemployed workers who do the same in search of a job, can meet randomly. In this case, when search is random, unemployed workers are equally likely to

track any vacant job available and are not able to direct their search towards different parts of the wage distribution or different job categories (Rogerson et al., 2005).

Second, when wages are posted ex-ante and firms with available vacancies offer higher wages in order to attract more applicants, unemployed workers direct their search to vacancies that offer better terms of trade. In this regard, when search is directed by wage posting, unemployed workers and firms with vacancies do not meet completely randomly.

In both cases, once the pair of agents: firm with available vacancies-unemployed workers meets, they decide whether to produce together, a process that is captured by a well-behaved matching function m(u,v) which describes the formation of new jobs or matches from unmatched agents (Pissarides, 2000).

Inside the EiB ecosystem, depending on the nature of the intervention provided by the service provider, the exchange process that brings agents together can either be decentralized or centralized.

Decentralized. When the intervention provided to the targeted unemployed inside the EiB ecosystem consists solely of services that tackle the binding factors that prevent the meeting between agents e.g. skilling or mobility, the service provider exercises no influence over the way firms with vacancies and unemployed workers meet and decide to produce, hence there is no planner that controls the decision-making process. The search process, through which the unemployed jobseekers can encounter firms with vacant jobs, can either be random or directed by wage posting; both combinations are plausible for in this case it is the pair of agents that decides on how to meet and whether to start producing together.

Definition 4. A job search and matching process is unregulated when the intervention delivered by the service provider that represents the EiB entity in the job creation process tackles the binding factors that prevent the beneficiaries inside the EiB ecosystem from filling available vacancies, but plays no active role in directing the job search towards specific submarkets or jobs and no role in job placement.

Centralized. When the intervention delivered by the service provider also includes a combination of job readiness, job search and orientation services, the service provider can influence in which labor markets the unemployed workers inside the EiB ecosystem direct their job search to. In this regard, even though the service provider exercises no control when it comes to the decision on whether the unemployed workers and firms with available vacancies will produce together, it can still influence the encounter between agents. Hence, in this case, the decision of the targeted unemployed inside the EiB ecosystem on which market to direct their job search is not guided solely by the wage posting of firms with vacancies but also by the service provider.

Definition 5. *A job search and matching process is partly regulated* when the intervention delivered by the service provider that represents the EiB entity in the job creation process, not only tackles the binding factors that prevent beneficiaries inside the EIB ecosystem from

filling available vacancies but also influences their decision on which specific market to direct the job search to.

The employment measures provided to the targeted unemployed inside the EiB ecosystem can also extend to include job placement and retention services. In this case, the service provider in addition to decisions on job search is also in charge of match formation for the targeted unemployed inside the EiB ecosystem. Hence, in this case acting as the operational representative of the EiB entity, the service provider, as the only decision-maker in the job creation process that takes place inside the EiB ecosystem, plays the role of a planner by reallocating the targeted unemployed across markets.

Definition 6. *A search and matching process is regulated* when the service provider that represents the EiB entity in the job creation process plays the role of a benevolent planner inside the EiB ecosystem.

3. Job Creation inside existing EiB Ecosystems: A look at the Data

The strategy that an EiB entity chooses in creating jobs determines the characteristics of the EiB ecosystem that emerges with the implementation of an EiB mechanism, in particular the ecosystem boundaries and environment. In this regard, it is possible to analyze the process of job creation that takes place inside an EiB ecosystem through the available data on the ecosystems that have emerged with the implementation of an impact bond mechanism in the area of employment and training. In addition, i conduct an ex-post analysis on the set of strategies that have been followed in existing ecosystems in the job creation process and how these results differ across international contexts.

3.1 Data Description

In constructing the dataset for this paper I use data on all impact bond projects in the area of Employment and training and 1 project in the area of Poverty reduction that has an employment focus, a total of 54 projects, issued over a time frame from 2012-2020. The dataset includes projects that have already been completed or are still in the implementation phase in 20 countries and are obtained from the Impact Bond Dataset of the INDIGO initiative. More specifically, data on variables such as *purpose, location, target population, service provider, intervention, outcomes, duration, capital raised and maximum outcome payments* are used. Even though the Impact Bond Dataset contains all the publicly available data on the issued impact bonds with an employment focus, 4 projects have undisclosed values of capital raised and 5 projects have unspecified durations. In addition, a variable that can be used to categorize each issuer location country according to the World Bank income classification is added. Four variables that aid in determining how the process of job creation takes place inside an employment impact bond ecosystem are also introduced:

1. The JC (job creation) variable, a categorical variable that depending on the nature of the interventions implemented to create jobs, can take two values:

i) *The Vacancy Injection Channel* when the interventions create jobs by placing beneficiaries into existing vacant jobs.

ii) *The Vacancy Generator Channel* when the interventions create jobs by generating new vacancies and filling them through the creation of sustainable microenterprises-the vacancy generator channel.

2.*The BF (Binding Factor) variable* that depending on the binding factor that a particular intervention tackles in order for the job creation process to take place inside the EiB ecosystem, can take seven possible values: i) coordination ii) skill iii) mobility iv) mobility and skill v) coordination and skill vi) coordination and mobility vii) coordination, skill and mobility.

3.The JS (job search) and 4. JP (job placement) variables, dummy variables that can be used as indicators in describing the search and matching process inside the employment impact bond ecosystem.

The JS variable takes the value 1 when a service provider delivers a combination of job search services to the beneficiaries and 0 otherwise.

The JP variable takes the value 1 when a service provider delivers intermediation services for job placement and 0 otherwise.

In addition, following the values of the JS and JP variable, the job search and matching process inside the EiB ecosystem can be: i) unregulated when both variables take the value 0 thus JS=0 and JP=0; ii) partly-regulated when JS=1 and JP=0 and iii) regulated when both variables take the value 1, thus JS=1 and JP=1.

3.2 Findings

3.2.1   The Set of Strategies followed in existing EiB ecosystems

In 89% of all issued employment impact bonds, jobs are created by reallocating the beneficiaries inside the EiB ecosystem to markets in which firms with available vacant jobs are stationed, by first tackling the binding factors that prevent them from meeting and producing together. More specifically, in 60% of the cases, the strategy followed by EiB entities in the job creation process has been what i call the VICH with a regulated SM process (Tab.1). The service provider, acting as the operational representative of the EiB entity in the job creation process, plays the role of a planner inside the EiB ecosystem. The set of interventions delivered by the service provider not only addresses the binding factors that prevent the beneficiaries inside the EiB ecosystem from filling available vacancies, but also determines the specific labor markets in which they will be reallocated (the final reconfiguration of beneficiaries across markets).

In 36% of the cases on the other hand, EiB entities have chosen the VICH with a partly regulated SM process, a strategy in which the service provider influences in which specific markets or firms with vacancies search is directed to but not the decision on whether they will start producing together.

In 4% of all issued bonds, jobs are created through the VGCH strategy, according to which a service provider through the set of interventions it implements exercises an influence on the number and distribution of new vacancies inside the EiB ecosystem. In this case, jobs are created by generating and filling new vacancies inside the ecosystem by turning the beneficiaries into entrepreneurs and as a result into local employers.

3.2.2 The Set of followed Strategies across Ecosystems

Even though the number of issuances is still modest, the VICH with a regulated SM process results as the ruling strategy among existing EiB entities (Tab.2). This strategy has been followed by EiB entities located in countries that belong to different income groups: from high income (54%) to upper middle income and lower middle income countries (100%) and as such are characterized by distinct labor market contexts.

However, in each of the cases when the VICH with a regulated SM process strategy is chosen in the job creation process, it has been in a context of a skills mismatch (74%) or a coordination failure (26%). Another widely followed strategy is that of the Vacancy Injection Channel with a partly regulated search and matching process. This strategy so far has only been followed in ecosystems located in high income countries (40%), in a context of a skill mismatch (89%) or a spatial mobility mismatch (11%).

In addition, by taking a closer look at the characteristics of the ecosystems in which a VICH with a regulated SM process is followed (Tab.2), similar attributes can be identified, with slight differences in focus. In spite of the income classification of the country in which the ecosystem is stationed, the explicit purpose of the ecosystem is the employment of beneficiaries (88% for high income countries and 100% for upper middle income countries) or the generation of fiscal savings (12% for ecosystems in high income countries). The ecosystems have an average time span of 4 years when in high income countries and 3.5 when in upper middle income. Inside the ecosystems that emerge in high income countries, for an average of $2M capital raised, on average 1032 beneficiaries receive the intervention whereas in upper middle income countries the number of beneficiaries is twice as much. Furthermore, in contrast to EiB ecosystems in high income countries, those located in upper middle income, have a more narrow target, focusing only on providing employment solutions for vulnerable individuals (100%) but include a wider age group (75%).

When comparing EiB ecosystems that are placed in countries that belong to the same income groups, but have followed slightly different strategies in the job creation process, the differences in the ecosystems that have emerged with the implementation of the impact bonds are mainly reflected in the boundaries that characterize the ecosystem and the characteristics of the beneficiaries inside. More specifically, when the followed strategy inside the EiB ecosystems located in high income countries includes job creation through the VICH but shifts from a regulated to a partly regulated SM process, it can be noted that the average time span of the ecosystem falls to 3.7 years and the average number of beneficiaries inside increases to 1719 (Tab.3). Furthermore, it appears that in the case when a VICH with a partly regulated SM process strategy is followed, the weight of EiB ecosystems that put a central focus on generating fiscal savings also increases. Similarly, a shift in focus can also be noted in terms of the beneficiaries inside the ecosystem. The age range is narrowed to include only

young people (100%) with an increased focus placed on NEET or NEET-at-risk as reflected by a significant increase in the weight of projects that target NEETs or NEET-at-risk from 27% in the case of high income EiB ecosystems in which a VICH with regulated SM process is followed to 63%.

4. Conclusion

In this paper, a theoretical framework that can work as an apparatus for analysing the ecosystems that emerge with the implementation of an impact bond mechanism and the job creation process that takes place inside is developed. Following the proposed framework, an employment impact bond ecosystem or an EiB ecosystem as i refer to in the paper, is defined as a set of interrelated and interdependent entities (usually an outcome payer, a service provider, an intermediary and investors) that form an integrated whole intended to achieve measurable employment outcomes for the same beneficiaries as the end target. The EiB ecosystem is determined by the purpose for its existence as captured by the outcome metrics, characterized by its decision-making structure (the EiB entity) and confined by its boundaries in location, time and scale.

In addition, based on the proposed framework, these concepts are further tested at an empirical front through a simple exercise with available data on all impact bonds with an employment focus issued over a time frame from 2012-2020 in 20 countries. I find that inside the EiB ecosystem, jobs are created either by reallocating targeted unemployed workers to markets with available vacant jobs-the vacancy injection channel or by creating and filling vacancies inside the ecosystem through business creation –the vacancy generator channel. The VICH with a regulated SM process results as the ruling strategy among existing EiB. So far, it has been followed in a context of a skills mismatch or a coordination failure in EiB ecosystems located in countries that belong to distinct income groups: from high income to upper middle income and lower middle income countries. In this case, the service provider, acting as the operational representative of the EiB entity in the job creation process, plays the role of a planner inside the EiB ecosystem.

In comparing EiB ecosystems located in countries that belong to the same income groups, but have followed slightly different strategies in the job creation process, the differences in the ecosystems that have emerged with the implementation of the impact bonds are mainly reflected in the boundaries that characterize the ecosystem and the characteristics of the beneficiaries inside.

Looking forward, by relying on the EiB theoretical framework as a benchmark, future research can develop in two fronts: At an empirical front, an issue of particular interest would be how the set of potential strategies that can be followed in the job creation process inside the EiB ecosystem performs in terms of employment and fiscal saving generation, in particular in the case when distinct strategies are followed in similar country contexts. Another issue worth exploring would be the evaluation of the synergy effect in the ecosystems that emerge with the implementation of an impact bond mechanism. However, the development of both issues is constrained by the accessibility of data that are specific to the

ecosystem created by the implementation of a particular EiB and as such need to be made available by each EiB entity.

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Appendices

Table 1: Set of Strategies followed by existing EiB entities in the job creation process

JC			BF				
			Total	**Coordination**	**Skill**	**Mobility**	**Mobility & Skill**
VICH			48 (89%)	8 (17%)	38 (79%)	2 (4%)	0 (0%)
JS	**JP**	**Strategy**					
0	0	VICH with unregulated SM process	2 (4%)	0 (0%)	1 (50%)	1 (50%)	0 (0%)
1	0	VICH with partly regulated SM process	19 (36%)	0 (0%)	17 (89%)	2 (11%)	0 (0%)
1	1	VICH with regulated SM process	31 (60%)	8 (26%)	23 (74%)	0 (0%)	0 (0%)
VGCH			2 (4%)				
VGCH & VICH			4 (7%)				

Source: Author's Calculations based on data from INDIGO Impact Bond Dataset

Table 2: The Characteristics of Ecosystems where EiB entities have followed the VICH with regulated SM process strategy in job creation

Strategy	VICH with regulated SM process								
Country Income Classification		EiB Boundaries				Beneficiaries that populate the EIB ecosystem			
	EIB Purpose Outcome Metrics	Time (years)		Scale		Age[1]		Status	Category[2]
				Capital Raised ($)	No. benefic.	<30	<30 & >30		
High Income (54%)	Employment 88%	Average	4	2M	1032	75%	25%	Underemployed 12%	Vulnerable 92%
	Fiscal Savings 12%	Max	10	16.1M	4000			Unemployed 88%	NEET/risk-NEET 27%
		Min	1	0.4M	25				Immigrants/ Refugees 15%

Table 2:Contin.

Upper Middle Income	Fiscal Savings 0%	Average	3.5	2.9M	2189			Underemployed 0%	NEET/risk-NEET 0%
		Max	5	8.6M	6000	25%	75%	Unemployed 100%	Vulnerable 100%
(100%)	Employment 100%	Min	2	0.3M	856				Immigrants/ Refugees 0%

Source: Author's Calculations based on data from INDIGO Impact Bond Dataset

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[1] In 19 projects age is not specified.

[2] The vulnerable group category includes individuals with offending histories or gang activity, substance misuse, learning disability, under extreme poverty, excluded from the economy or labor market, mental health problems or that have been victims to violence.

Table 3: The Characteristics of Ecosystems where EiB entities have followed the VICH with partly regulated SM process strategy in job creation

Strategy	VICH with partly regulated SM process									
Country Income Classification		EiB Boundaries							Beneficiaries that populate the EIB ecosystem	
	EIB Purpose	**Time (years)**		Scale		Age			**Status**	**Category**
				Capital Raised	**No. benefic.**	**<30**	**<30 & >30**			
High Income (40%)	Employment **74%**	Average	3.7	2.3M	1719	100%	0%		Underemployed **21%**	Vulnerable **79%**
	Fiscal Savings **16%**	Max	6	12.4M	10,0000				Unemployed **79%**	NEET/risk NEET **63**
		Min	1	0.2M	91					Immigrants/ Refugees **5%**

Source: Author's Calculations based on data from INDIGO Impact Bond Dataset