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The Role of Motivated Financial Institutions on Community Currencies Loans

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Abstract: Community currencies have recently emerged as tools for assisting the disadvantaged. In order to make a contribution to the larger field of community currencies, the purpose of this research is to investigate how a financial institution evaluates community currency lending. We show, using an adverse selection model, the importance of the role of motivated financial institutions in the effectiveness of community currency loans for small entrepreneurs. If those institutions are unmotivated, the market collapses, and only traditional loans are offered. Additionally, if there is enough intrinsic motivation, the size of the loans also increases, which is beneficial to the borrowers. Finally, this paper emphasizes the importance of subsidies in this sector, which act as catalysts by increasing the likelihood that community currency loans will be offered, as well as increasing loan sizes.

Keywords: community currency; microfinance; adverse selection model

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1. Introduction

Community currencies are alternative currencies that allow the mobilization of local resources for local needs and the development of resilient societies (Chasin et al. 2020). Essentially, a community currency is used as a means of payment. It can perform the conventional functions of a currency, such as a medium of trade, a store of value, and a unit of account (Ryan-Collins et al. 2013). They are limited to a local region which covers a single entity that recognizes the currency as an alternative means of payment. Community currencies (unlike official national currencies) are generally not interchangeable with another currency. Hence, they cannot abandon the area of validity, which limits scarcity. As a result, it can provide continuously added liquidity to the other currencies in the area (Schraven 2001).

There is a need for collateral in most community currencies. These currencies need you to trade the official currency for delivery. Others act as a shared credit scheme, using peer pressure as a means of social collateral and allowing access to others in the network (Zeller 2020). Among other names, community currencies they are generally called parallel currencies, local currencies, alternative currencies, or simply complementary currencies (Blanc 2011). Although the general goal is to enhance monetary system resilience, the community currencies are also intended to expand the circulating share of the deposits and increase local revenue. This means that a bigger share of funds would be consumed locally (Michel and Hudon 2015).

Businesses are slower to implement technologies in lower-income areas. Research shows that credit limit is one of the reasons (Feder 1985). In addition, many poor people in need of loans do not have financial access, especially in non-urban areas in developing countries (Demirguc-Kunt et al. 2018). Nowadays, the banking sector has the advantage of

generating approximately 95 percent of the official supply of money as interest-bearing debt to itself. They set the course of the economy by regulating how practically all money reaches circulation, giving priority to lending for short-term benefit over lending for long-term worth to society (Robertson 2012).

Nevertheless, in recent decades, the number of community currency initiatives has increased dramatically across the world (Lietaer 2001), partly attributed to global support for a solid monetary coordination that promotes sustainable communities (Wheatley et al. 2011). According to Seyfang and Longhurst (2013), there are more than 3000 clusters of related projects across 23 countries and six continents. With a growing number of studies addressing the topic, the area is currently on the path to becoming a solid discipline (Place and Bindewald 2015).

Besley and Ghatak (2005) define motivated agents as those "who pursue goals because they perceive intrinsic benefits from doing so" and give examples such as doctors, researchers, judges, soldiers and NGOs (non-governmental organizations). However, to the best of our knowledge, no previous study has focused on how intrinsic motivation in financial institutions can affect the market of community currencies. Thus, this paper fills this gap and also goes further, by showing the effect of subsidies on this sector. Hence, our main research question is:

RQ: What is the theoretical effect of intrinsic motivation the community currency market?

We will use an adverse selection model to assess this research question. Our main results show that unmotivated financial institutions will only offer traditional loans. However, motivated financial institutions will offer community currency loans of a larger amount, which is beneficial to the borrowers. Finally, this paper emphasizes the importance of subsidies in this sector, which act as catalysts by increasing the likelihood that community currency loans will be offered, as well as increasing loan sizes.

The following section is a literature review, while the next focuses on the model and the results. We conclude in the final section.

2. Literature Review

In this literature review section, we put forward a review of selected papers which show the importance of community currencies in improving both social and environmental aspects of life for disadvantaged people. These function as intrinsic motivations for the financial institutions offering community currency loans, which is a key aspect in our model, which will be developed in the next section. As several authors note, community currencies have economic, social, and environmental impacts, and we will address each one in the next subsections.

2.1. Economic Benefits and the Role of Motivated Agents

Community currency is located within the larger area of microfinance. Microfinance is the area of finance concerned with providing financial services and products to those that historically did not have access to financial institutions (Leite et al. 2019). Additionally, these institutions can be either for-profit or not for profit. (Leite et al. 2020). Microfinance have had positive effects such as empowering women (Leite and Civitarese 2019), inequality reduction (Hermes 2014) and business formalization and tax compliance (Zucco et al. 2020).

One big question in this field is the effect of "motivated agents" (Besley and Ghatak 2005). Usually, these institutions are either for-profit or non-profit, with most institutions focused on community currency loans being non-profit, since non-profit institutions have more "non-financial" incentives to lend community currencies (Leite and Civitarese 2019).

Additionally, Karaivanov (2018) shows that incentives for non-profit financial institution, such as subsidies or charging interest rates on loans, can change the incentives for the institution, and also affect the borrowers.

2.2. Social Benefits

Community money is issued as a form of substitute currency that circulates only within a single community, helping members stay together and promoting social bonding. It is also a vehicle for raising social cohesion and achieving community goals (Siqueira et al. 2020). Since community currencies redraw the supremacy over the national currency by giving residents a place to store their money and use payment mechanisms as an essential part of a defense, they confront issues caused by money (specifical issues of poverty and currency instability) as well as those caused by the currency itself or the monetary systems (Dini and Kioupkiolis 2014).

The difference between communities that have a large amount of social capital and those that do not are differentiated by a range of factors. For instance, robust networks of public participation engagement serve to maintain and develop generalized reciprocity norms, helping to sustain and nurture social confidence. These networks make collaboration and cooperation and resolution of dilemmas possible, as well as amplify each other, resulting in greater legitimacy of decisions and joint action (Putnam 2000). If the use of the currency is local, the capital can flow more quickly and more extensively, boosting the local economic multiplier and increasing local revenue (DeMeulenaere 1998). In addition, critical work carried out in the non-market sector can be easily assessed, recognized, shared, recompensed using community currencies, and enhanced by knowledge-sharing and voluntary work, which is vital to the functioning of an integrated economy (Seyfang and Longhurst 2013).

Local exchange trading systems (LETS) are an example of the above; they are a subset of community currency frameworks that operate through a similar mechanism of collective credits rather than a direct exchange. Individuals offer a service in exchange for points, which they can use to purchase goods and services from other members, such as transportation, clothing, childcare, housework, and home improvements (Lee et al. 2020). In contrast to traditional business transfers, they tend to facilitate transactions that are not economically viable, such as those that promote the social integration of marginalized communities (Collom 2008).

The social capital encouraged by LETS tends to generate more group activities, collaboration, and social objectives, as well as the fulfillment of several social needs that are typically missed by many other sustainable business initiatives. The most frequently cited was an "increase in gatherings and community events" (more than 80 percent), followed by an "increase in community awareness" (more than 50 percent), and a "friendlier atmosphere" and "an increase in identification with the locality" (both above 40 percent). The advancements in social life that result from LETS have the potential to increase well-being and to meet social needs that are sought in the productive economy (Briceno and Stagl 2006). Considering the belief that LETS can promote social capital, it is reasonable to assume that certain community currency programs will function as agents of social transformation, influencing individual perceptions and choices (Richey 2007).

2.3. Environmental Benefits

Economic reorganization is often regarded as a critical prerequisite for sustainable development (Porritt 2003). Community currencies are a new way for anyone who is financially excluded or unwilling to pursue structured jobs to gain access to products and services (Williams et al. 2001). The intention behind community currencies is "to provide more environmentally and socially sustainable forms of money and finance" (Michel and Hudon 2015). Furthermore, they are argued to promote sustainable economic growth for small and local or green entrepreneurs, who are perceived to be more committed to local communities, by offering shared credit mechanisms among local businesses, enabling them to transact without the need for cash (Shuman 2013).

The shared economy idea—the process of giving each other temporary access to unused capacity—is regarded as one of the most significant recent industry developments.

Indeed, sharing fosters new ways of sociability and mutual interaction that are mediated by unity and reciprocity rather than the economy or state decisions (De Angelis 2007).

We define the sharing economy as a socioeconomic platform capable of disrupting conventional corporate practices while increasing mutual bonding and cooperation. It empowers people by making them conscious of the possibility of sharing their skills, time, and excess capacity embedded in shareable goods (Andreoni 2020). Skills learned through the community could be used to support the community. Often, they may be available to outsiders and are not exclusive to the community only. Social centers and civic centers, such as recreation or learning venues, provide programs for the neighborhood. Therefore, mutual usage is not centered on consumer interests and trade, but on sharing and donation (Meyer and Hudon 2017).

3. Model

After a review of the literature on two key areas in community currencies, the models that follow will establish the role of financial institutions in the sustainability of community currency loans for small entrepreneurs. The analyses are carried out for both unmotivated (traditional financial institutions) and motivated lenders (such as not-for-profit or government-backed lenders). The importance of the sustainability for community currency lending stems from the fact that credit availability is vital for economic development, and when performed with community currencies, the benefits are not just economic, but also social and environmental.

For this theoretical approach we will use a standard adverse selection model. This approach has been widely used to better understand pricing strategies, financial contracts, and taxation. In this situation, borrowers' decisions can take two forms. They can act without the principal's knowledge, as in the case of moral hazard (by hidden actions), or they can have information that the principal is unaware of, as in the case of adverse selection (by hidden knowledge) (Freixas and Laffont 1990). In this paper we assume that the borrower has some information about their own type, which is unknown to the institution, and differently from moral hazard, they will repay the loans, as we explicitly state in the next section.

Furthermore, community currencies are classified into three types: backed currencies, unbacked currencies, and mutual credit system currencies (Pfajfar et al. 2012). For the purposes of our model, we will only consider mutual credit system currencies rather than backed or unbacked ones. We only focus on the mutual credit system currencies, since only these currencies required a payback and are structured as loans.

3.1. Model Description

In our model, the profit for the bank, for a loan amount L, is: $P(L) = S(L) - RL$, in which $S(L)$ is the loan repayment and RL is the cost of capital for a single period, which can be expressed as $\left(1 + r_f\right)L$, with r_f being the risk-free rate.

The borrower receives $B(L, \alpha) = \alpha\theta f(L) - S(L)$, in which $f(L)$ is a concave function which captures the production of the borrower over the amount L of capital. The parameter $\theta \in \left\{\underline{\theta}, \overline{\theta}\right\}$ is a production shock that differentiates the "good" borrower $\left(\theta = \overline{\theta} > \underline{\theta}\right)$ from the "bad" one $(\theta = \underline{\theta})$. We define $\delta := \overline{\theta} - \underline{\theta}$ as the "productivity spread". The borrower has a probability μ of being "good" and $(1 - \mu)$ of being "bad". Notice that, in this model, there is no delinquency, and both "good" and "bad" borrowers repay their loans, the difference being that "good" borrowers have a high productivity and "bad" borrowers have a low productivity. This is a standard assumption in modelling microcredit and microfinance loans (Roy and Chowdhury 2009), because these loans often have collaterals and delinquency is very small (Zeller 2020).

Additionally, the parameter $\alpha \in \{\varepsilon, 1\}$, with $0 < \varepsilon < 1$, denotes the disutility of community currency over money for the borrower, since now they can only spend the amount of the loan in the community, which restricts their options. Hence, if the firm offers a loan with community currency, we have $\alpha = \varepsilon$ (the borrower faces a disutility), and if a

standard loan is offered then $\alpha = 1$, and there is no disutility for the borrower. For the sake of simplicity, we say that $\overline{B} = B(\overline{L}, \overline{\alpha})$ and $\underline{B} = B(\underline{L}, \underline{\alpha})$.

The model timeline is as follows. At time $t = 1$ it offers a menu of options to the borrower, which either rejects the options or accepts one. At $t = 2$ the borrower realizes their profits and pays back $S(L)$ to the institution.

3.2. First and Second-Best Solutions under Standard Loans

Here we assume that the institution does not offer community currency loans, hence $\alpha = 1$, and $B(L) = \theta f(L) - S(L)$. The first best solution is achieved when the borrowers' types are known to the financial institution. Then it simply matches the marginal return to the marginal cost, offering the following: $\overline{\theta} f'\left(\overline{L^F}\right) = R$ and $\underline{\theta} f'\left(\underline{L^F}\right) = R$.

The second-best solution is achieved when the types of the borrowers are not within the knowledge of the financial institution, and it only knows the probability of a borrower being of each type. Hence, the institution must solve the following optimization problem with an (ICC) for the higher type of borrower and a participation constraint (PC) for the lower type:

$$\max_{\{L\}} \mu P(\overline{L}) + (1 - \mu) P(\underline{L}).$$

Adding $\theta f(L) - \theta f(L)$ to each term we have:

$$\max_{\{L\}} \mu(\overline{\theta} f(\overline{L}) - \overline{\theta} f(\overline{L}) + S(\overline{L}) - R\overline{L}) + (1 - \mu)(\underline{\theta} f(\underline{L}) - \underline{\theta} f(\underline{L}) + S(\underline{L}) - R\underline{L}).$$

Rearranging the terms, we arrive at the following:

$$\max_{\{L\}} \mu \left(\overline{\theta} f(\overline{L}) - R\overline{L}\right) - \mu\left(\overline{\theta} f(\overline{L}) - S(\overline{L})\right) + (1 - \mu)(\underline{\theta} f(\underline{L}) - R\underline{L}) - (1 - \mu)(\underline{\theta} f(\underline{L}) - S(\underline{L})).$$

By defining the function $M(L) := \theta f(L) - RL$ as the profit function of the institution if it extracted all the profitability of the borrower as repayment (i.e., $S(L) = \theta f(L)$) and also by using the function $B = \theta f(L) - S(L)$, we can substitute the terms for the following:

$$\max_{\{B,L\}} \mu M(\overline{L}) + (1 - \mu) M(\underline{L}) - \left(\mu \overline{B} + (1 - \mu)\underline{B}\right)$$

subject to:

$$\text{(i) } \overline{B} \geq \underline{B} + \delta f(\underline{L}) \text{ [ICC], and}$$
$$\text{(ii) } \underline{B} \geq 0 \text{ [PC].}$$

The first constraint is an incentive compatibility constraint which prevents the "good" borrower from pretending to be a "bad" one[1], and the second one is a participation constraint which prevents the "bad" borrower of accepting an option which carries a negative utility for them.

We will use the above transformation from the profit function $P(L)$ to the auxiliary maximum profit function $M(L)$, with the correction term depending on the borrower utility B, on all the cases, and the proof that we can always make this transformation can be consulted in Laffont and Martimort (2009).

The solutions to the aforementioned problem (see Freixas and Laffont 1990) yield: $\overline{\theta} f'\left(\overline{L^S}\right) = R$ and $\left(\underline{\theta} - \frac{\mu}{1-\mu}\delta\right) f'\left(\underline{L^S}\right) = R$. Upon comparison to the first best solutions, one can clearly see that $\overline{L^F} = \overline{L^S}$ and $\underline{L^F} > \underline{L^S}$. Thus, there is a downward distortion in the loan size for the menu option for the "bad" borrower.

We now introduce the option for the institution to offer a community currency loan, instead of the standard loan. We subdivide it in two cases: first we present the case of an unmotivated financial institution, and second we present the case of a motivated one.

Case 1: *Unmotivated financial institutions*

In this case we analyze the baseline model, as previously described. It is worth noting the fact that the institution, in this setup, is indifferent to whether it lends money or community currency. Hence, we call this institution an "unmotivated" one.

Because the institution is unmotivated, then the intrinsic utility that it derives is purely dependent on the return it receives from the loans. Therefore, this institution must solve the following:

$$\max_{\{B,L,\alpha\}} U(L,\alpha) = \mu M(\overline{L}) + (1-\mu)M(\underline{L}) - \left(\mu\overline{B} + (1-\mu)\underline{B}\right)$$

subject to:

$$\begin{gathered}\text{(i) } \overline{B} \geq \underline{B} + \underline{\alpha}\delta f(\underline{L}),\\ \text{(ii) } \underline{B} \geq 0, \text{ and}\\ \text{(iii) } \overline{\alpha} \geq \underline{\alpha}.\end{gathered}$$

Now there is the addition of another participation constraint, which prevents the financial institution of offering a community currency loan for a "good" borrower, while offering a standard money loan for a "bad" borrower, since the borrower derives more utility from a money loan when compared to a community currency loan. The solution of the problem enables us to establish the following proposition:

Proposition 1. *If the financial institution is unmotivated, then the market for community currency loans collapses and only standard loans are offered*.

Proof. If the first constraint is not binding, then the institution could increase its utility by increasing $S(L)$, hence it must be satisfied at equality. A similar argument can be made for the participation constraint. Using those two equalities and from the fact that $M(L) = \alpha\theta f(L) - RL$, we can rewrite the problem to:

$$\max_{\{\overline{\alpha},\overline{L}\};\{\underline{\alpha},\underline{L}\}} \mu\left(\overline{\alpha}\overline{\theta}f\left(\overline{L}\right) - R\overline{L}\right) + (1-\mu)(\underline{\alpha}\underline{\theta}f(\underline{L}) - R\underline{L}) - \mu\underline{\alpha}\delta f(\underline{L}).$$

Solving the first order conditions yield: $\overline{\alpha}\overline{\theta}f'\left(\overline{L^*}\right) = R$ and $\underline{\alpha}\left(\underline{\theta} - \frac{\mu}{1-\mu}\delta\right)f'(\underline{L^*}) = R$. Because $\theta f(L) > \varepsilon\theta f(L)$, the institution does not offer community currency loans and $\overline{L^*} = \overline{L^S}$ and $\underline{L^*} = \underline{L^S}$. □

Thus, we show that there is no incentive, under our model, for unmotivated financial institutions to offer community currency loans. This happens because the offer of community currency restricts the options of the borrowers for investment, which reduces the profit, generating a disutility. We now proceed to analyze the case of motivated institutions.

Case 2: *Motivated Financial Institutions*

In the previous scenario, the utility function for the financial institution did not include any utility for lending community currency instead of money. Now we introduce a new utility function which includes an extra term, as presented below:

$$P(L,\alpha) = \underbrace{S(L) - RL}_{Profit} + \underbrace{(1-\alpha)\sigma(L)}_{Intrisic\ Motivation}.$$

The function $\sigma(L)$ is a concave function that captures the institutions' intrinsic motivation of offering a community currency loan. The function is concave in order to capture two important features of motivation: it increases over L (i.e., the institution will never derive *more* intrinsic utility by lending *less*, due to the fact that it wants to help the borrower by lending as much as possible), and the diminishing marginal utility over L.

This can be understood as the utility for a financial institution to know that the amount lent has been spent in the community, fostering its development, and creating a more

sustainable environment. If the institution lends money, then $\alpha = 1$ and there is no intrinsic motivation. However, if it has lent community currency instead, then it has a positive utility of $(1-\varepsilon)\sigma(L)$.

Therefore, the institution has to solve the following problem:

$$\max_{\{B,L,\alpha\}} M(L,\alpha) = \mu M(\overline{L},\overline{\alpha}) + (1-\mu)M(\underline{L},\underline{\alpha}) - \left(\mu\overline{B} + (1-\mu)\underline{B}\right)$$

subject to:

$$\begin{gathered}\text{(i) } \overline{B} \geq \underline{B} + \underline{\alpha}\delta f(\underline{L}),\\ \text{(ii) } \underline{B} \geq 0, \text{ and}\\ \text{(iii) } \overline{\alpha} \geq \underline{\alpha}.\end{gathered}$$

The solution yields the following proposition:

Proposition 2. *If the financial institution is sufficiently motivated, then it offers community currency loans with an increased loan size.*

Proof. Using the same argument from Proposition 1, we can rewrite the problem to be as follows:

$$\max_{\{\overline{\alpha},\overline{L}\};\{\underline{\alpha},\underline{L}\}} \mu\left(\overline{\alpha}\overline{\theta}f\left(\overline{L}\right) - R\overline{L} + (1-\overline{\alpha})\sigma\left(\overline{L}\right)\right) + (1-\mu)(\underline{\alpha}\underline{\theta}f(\underline{L}) - R\underline{L} + (1-\underline{\alpha})\sigma(\underline{L})) - \mu\underline{\alpha}\delta f(\underline{L}).$$

Taking the first order conditions yield: $\overline{\alpha}\overline{\theta}f'\left(\overline{L^{**}}\right) + (1-\overline{\alpha})\sigma'\left(\overline{L^{**}}\right) = R$ and $\underline{\alpha}\left(\underline{\theta} - \frac{\mu}{1-\mu}\delta\right)f'(\underline{L^{**}}) + (1-\overline{\alpha})\sigma'(\underline{L^{**}}) = R$. Hence if the institution is sufficiently motivated, i.e., $P\left(\overline{L^{**}},\varepsilon\right) > P\left(\overline{L^{**}},1\right)$ and $P(\underline{L^{**}},\varepsilon) > P(\underline{L^{**}},1)$, it offers community currency loans. It follows that the institution also offers $\overline{L^{**}} > \overline{L^F}$ and $\underline{L^{**}} > \underline{L^F}$. □

The results show that the intrinsic motivation of a financial institution may make it overcome the fact that community currency loans may yield lower profits than traditional loans. Thus, this intrinsic motivation prevents the market from collapsing.

This intrinsic motivation can be understood as a trade between the extrinsic motivation (profit) and the utility derived from the development of the local economy and environment. If the institution offers community currency loans, then $P(L,\varepsilon) = S(L) - RL + (1-\varepsilon)\sigma(L)$, and it is trading a reduction of $(1-\varepsilon)\theta f(L)$ in its extrinsic motivation for an increase of $(1-\varepsilon)\sigma(L)$ of its intrinsic one.

Case 3: *The Role of Subsidies for Motivated Financial Institutions*

It is very common for a government to give subsidies for the usage of community currencies, if not running these currencies through state-owned corporations, or with subsidies for privately owned financial institutions. Thus, usually the government grants loans to these financial institutions without interest (or with the interest rate very close to zero). Hence, the cost of capital goes from being $\left(1+r_f\right)L$ to just L. Therefore, the profit for the bank, for a community currency loan amount L, becomes $P(L,\varepsilon) = S(L) - L + (1-\varepsilon)\sigma(L)$. However, for cash loans the profit is $P(L,1) = S(L) - RL$, since there are no subsidies for cash loans.

Therefore, the motivated institution has to solve the same problem from Case 2, but now with $S(L) - L$. This yields the following proposition:

Proposition 3. *Subsidies increase loan sizes for both types of borrowers and also increase the likelihood of the community currency loan option being offered.*

Proof. Using the same argument from Propositions 1 and 2, we can rewrite the problem to be as follows:

$$\max_{\{\overline{\alpha},\overline{L}\};\{\underline{\alpha},\underline{L}\}} \mu\left(\overline{\alpha}\overline{\theta}f\left(\overline{L}\right) - \overline{L} + (1-\overline{\alpha})\sigma\left(\overline{L}\right)\right) + (1-\mu)(\underline{\alpha}\underline{\theta}f(\underline{L}) - \underline{L} + (1-\underline{\alpha})\sigma(\underline{L})) - \mu\underline{\alpha}\delta f(\underline{L}).$$

Taking the first order conditions yield: $\overline{\alpha}\overline{\theta}f'\left(\overline{L^{sub}}\right) + (1-\overline{\alpha})\sigma'\left(\overline{L^{sub}}\right) = 1$ and $\underline{\alpha}\left(\underline{\theta} - \frac{\mu}{1-\mu}\delta\right)f'\left(\underline{L^{sub}}\right) + (1-\overline{\alpha})\sigma'\left(\underline{L^{sub}}\right) = 1$. Again, if the institution is sufficiently motivated, i.e., $P\left(\overline{L^{sub}}, \varepsilon\right) > P\left(\overline{L^{**}}, 1\right)$ and $P\left(\underline{L^{sub}}, \varepsilon\right) > P(\underline{L^{**}}, 1)$, it offers community currency loans. Notice that there is no $P\left(\overline{L^{sub}}, 1\right)$ or $P\left(L^{sub}, 1\right)$, due to the fact that there are no subsidies for cash loans. Thus, since now the company is increasing its profits by $r_f L$ when offering community currency loans, it is easier for them to fulfill this constraint and offer this type of loan. Moreover, because the interest rate is zero, it follows that the institution also offers $\overline{L^{sub}} > \overline{L^{**}} > \overline{L^F}$ and $\underline{L^{sub}} > \underline{L^{**}} > \underline{L^F}$. □

Thus, subsidies can help motivated financial institution that still do not have enough incentives to offer community currency loans to offer it. Additionally, subsidies also increase the size of the loans for both types of borrowers.

4. Conclusions

The findings of our analyses, which used a standard adverse selection model, show that both intrinsic motivation for the financial institution and subsidies increase loan sizes and the likelihood of offering community currency loans. This is critical because community currencies have recently emerged as a mechanism for assisting the socially disadvantaged and promoting social capital.

Additionally, we show that without intrinsic motivation for the institutions, the market collapses and only cash loans are offered. This is driven by community currencies being generally limited to a local region that recognized them as a means of payment. Therefore, they are not usually exchangeable and cannot leave the validity area. This reduces the investment opportunities for the debtor, and as a consequence, reduce the repayments for the creditor.

Our results corroborate with previous theoretical papers (Besley and Ghatak 2005; Roy and Chowdhury 2009; Karaivanov 2018) which shows the importance of motivated institutions in the field of microfinance, microcredit and governmental projects. The novelty of our paper is to expand the results to include community currency loans, and also the effect of subsidies on this market.

It is feasible that future research can incorporate additional factors for intrinsic motivation, such as corporate social responsibility initiatives, or that they will examine specific geographies or currencies. The results of our research may also be applied to new areas of the community currency field, such as cryptocurrencies or financial innovation. Additionally, although repayment in these kinds of loans is high, future research can incorporate a likelihood of default in payments.

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Note

[1] Notice that it is not beneficial for the "bad" borrower to pretend to be a "good" one, since they will certainly face $S(\overline{L}) = \overline{\theta} f(\overline{L}) > \underline{\theta} f(\overline{L})$ which implies a negative utility for them.

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