

# UNIVERSITA' DEGLI STUDI DI PADOVA

# DIPARTIMENTO DI SCIENZE ECONOMICHE ED AZIENDALI "M.FANNO"

# CORSO DI LAUREA IN ECONOMIA

**PROVA FINALE** 

# "SELF-EMPLOYMENT AND MICROFINANCE IN DEVELOPING COUNTRIES"

**RELATORE:** 

CH.MO PROF ELISABETTA LODIGIANI

LAUREANDO/A: ALBERTO ZAGO

MATRICOLA N. 1172664

ANNO ACCADEMICO 2019 - 2020

## Abstract

Il presente lavoro si propone di analizzare il fenomeno del lavoro autonomo nei Paesi in via di sviluppo, attraverso uno studio della letteratura economica classica sull'origine di tale fenomeno e un'analisi descrittiva che ne aiuti a comprendere l'importanza a livello globale. Successivamente, viene riportato uno studio per quanto riguarda l'effetto del lavoro autonomo sul mercato del lavoro in termini di status occupazionale, reddito e produttività, sostenendo l'assunto per il quale, nonostante nei paesi sviluppati il lavoro autonomo, per produrre esternalità positive, debba essere accompagnato da alti livelli di imprenditorialità e istruzione, nei Paesi in via di sviluppo è in grado di permettere a chi esercita tale attività di uscire da una condizione di estrema povertà, anche se gli investimenti in capitale umano sono minimi. Per questo motivo vi è, all'interno del capitolo due, un approfondimento sul ruolo delle politiche nel promuovere questa tipologia di impiego. Di rilievo si è dimostrato il ruolo che svolge il micro credito che, in operazioni a carattere complementare, di inclusione ed educazione finanziaria, permette di ottenere ottimi risultati in termini di reddito e miglioramento della qualità della vita, anche nel lungo periodo. Nel capitolo conclusivo vi è riportato un esempio di come un'azienda che opera in questo settore, Microfinanza S.r.l, abbia sviluppato un progetto di inclusione finanziaria destinato al Sudan. In questo schema si evidenzia come il finanziamento al lavoro autonomo riesca nel tempo a creare flussi di cassa crescenti da destinare proporzionalmente al risparmio e ad altri servizi di base, come la sanità. Il progetto è stato sviluppato successivamente aver studiato a fondo i loro sistemi finanziari e assistenziali e le caratteristiche sociali della popolazione Sudanese attraverso il computo di opportune statistiche, alcune delle quali, la curva di Lorenz e l'indice di Gini.

# **INDEX**

1ntroduction	oduction
--------------	----------

1.	Self-employment phenomenon	5
	1.1 Definition	5
	1.2 Extent	6
	1.3 Origin of phenomenon, a view from development theory	.0

2. Public policy and self-employment	16
2.1 Leads S.e, to reduce poverty in developing countries?	16
2.2 Consequences in the labour market	20
2.3 Public policies	21
2.4 Effectiveness of the Micro Finance tool	24

3. Microfinance and self-employment	
3.1 Microfinance, self-employment and human capital	
3.2 The Microfinanza's increasing savings scheme	
3.4 Methodology	
3.4 Conclusion	

graphy35
----------

# Introduction

In the last decades, many Asian, South American and African Economies are experiencing a development process defined by the development economics literature as structural change. This economic transaction is having multiple social and labour consequences. In this thesis is treated a specific labour market phenomenon characteristic of these economies, the Selfemployment. The paper is developed firstly to understand what is self-employment, clarifying the concept comparing the different meanings of the other employment typologies that occur in parallel in developing economies. It is also developed a descriptive analysis to show the extent of self-employment in those economies, carrying out a comparative analysis that shows the changes that have occurred over time. It is reported also a brief survey of the literature concerning the self-employment origins, starting from the classic studies of Lewis (1954), Harris and Todaro (1970), the Robert E. Lucas, Jr. (1978) model "on the size distribution of business firm" to conclude with the "O-Ring Theory" developed by Michael Kramer (1993). The second chapter represents the core of the paper. It provides, through an in-depth analysis, to assess the self-employment as poverty reduction tool, with a successive overview on the role of policies in strengthening this poverty reduction tool in developing countries. One of the most important and successful activity, promoted by policymakers and international cooperation organizations and evaluated by several papers is microfinance. For this reason, it is developed an important review of the existent literature about microfinance's interventions in developing countries and a general overview about the different additional services provided by the microfinance institutions that allows to enhance human capital and improve living conditions of users. More specifically, is analysed the linkage between selfemployment, credit, health, wealth and human capital. To conclude there is reported the meanings and the formulas at the base of increasing saving scheme conceived by Microfinanza S.r.l, a company that operates in this field for roughly twenty years. This scheme is structured to show that after five cycles of future intervention in Sudan, users' revenues and savings increase proportionally at the injection of external founds. The scheme is accompanied by the Lorenz curve and Gini Index, opportunely computed to study the distribution of the income of Sudanese People, and other charts to show the outcomes of the pilot project.

# 1. Self-employment phenomenon

### **1.1 Definition**

To understand the self-employment phenomenon is useful in a first phase, to discuss the link that elapses between poverty and labour market, and successively go through the different definitions of self-employment, to clarify the concept that is developed successively. The following considerations are developed taking inspiration by the article of the IZA World of Labour (Fields G. S. 2019). It is simple to think that extreme poverty is strongly related to unemployment for the fact that labour is the main asset of the poor. However, this assumption is not completely exact. The latest data concerning poverty condition and employment status, show that 190 million people are unemployed with null wage, but there are roughly 730 million that are employed that earned so little to not achieve a standard of living of even US\$ 3.10 per person per day (amount internationally defined as PPP, poverty in purchasing power parity dollars). These data highlight that the employment issue is relatively more important than unemployment one (Fields G. S. 2018), and therefore the efforts of the development agencies, should be concentrated in enforcing the existing employment conditions, rather than create new jobs, to fight poverty and reach the subsistence wage in developing economies.

Self-employment's phenomenon is frequently associated with entrepreneurship or informal employment. Consequently, it is useful to study the differences and the common aspects of these similar, but not equal, concepts. For many people, "entrepreneurship" evokes the image of a risk-taker individual setting up a business with the purpose of making it expands and thrive. In developing countries, however, self-employment is mainly practiced as a temporary source of money to live while waiting to move to a more remunerative profession. An example of the activity mentioned above is "resell". It consists of selling articles purchased through official channels to a final consumer applying a mark-up, (Collins English Dictionary 2020). This business can't be defined as entrepreneurship because, especially when is observed among developing countries, for people is a method to reach a minimum amount to sustain themselves temporarily, probably until formal hiring, and so is not a long run orientated activity. Several studies developed in Sri Lanka, West Africa and elsewhere have shown this business attitude and a lack of potential business growth (Fields, G. S. 2019).

It is good to specify also the difference between self-employment and informal labour. To compare the two of them is quite unhelpful. The significance of "working informally" and the

other terms such as "informal economy" or "informal sector" are not defined empirically by any studies, and for this reason, the meaning of "informality" is subjective and changes depending on the context of the application. Besides, even when through common convection, it is decided to define informal employees as people that work outside the official state regulation, as that the labour law and social protection make and enforced by the state, it results to be difficult to quantify this phenomenon through empirical data. This is for the fact that the people that are involved in the unprotected and unregulated work are paid workers, and not self-employed. After these important distinctions that have helped to make selfemployment's concept more clear and avoid misconception, the following paragraph provides an in-depth analysis to understand the extent of the phenomenon in developing regions.

### 1.2 Extent

To develop this analysis is useful to distinguish two subcategories of self-employment, defined as follow by the International Labour Organization, henceforth ILO (2019). The first are self-employed who don't employ others defined as "own-account workers", and the second ones are workers who hold self-employment jobs as own-account workers in a business operated by a related person living in the same family, defined as "contributing family workers". Including these additional two specifications, it is possible to represent graphically the extent of the phenomenon, using the available data present on the ILO web database (1996-2020).

The following charts are developed using the projections made by ILO for 2019, for the fact that the latest recorded data are from 2017. Table 1 shows the percentages relatively self-employment using the two different definitions, and the total amount by region. It is chosen to focus mostly on the developing regions such as Northern and Sub-Saharan Africa, passing through the Asian region and pacific, involving Eastern Europe and taken the US as one of the most relevant examples of a developed nation to compare the different outcomes. Therefore, seeing at the table, there is evidence that the Sub-Saharan region has 74% of self-employed, followed by South-Eastern Asia and the Pacific and Latin America and the Caribbean. The data from the US shows that in developed nations self-employment is not a relevant labour market phenomenon.



Source: ILO web database 1996-2020

Table 2, shows the percentages of self-employed people for each region using as drivers the type of self-employment and gender. What is visible it is that in the Sub-Saharan region, roughly half of the population is an own-account worker, indifferently from the gender. There's evidence also that self-employment is more common among the males in all the examined regions and overall the percentage for the contributing family workers are always minor.



Table 3, represents the cumulative time series concerning self-employment phenomenon, including own-account workers and family workers. The statistic uses the historical data from

1991 up to the most recent previsions for 2021, represented in intervals of five years. The chart shows that generally, the trend for all the examined regions is negative. Is evident that there is a peak around the nineties for Eastern Europe, mostly imputable at the transition to an open-market economy occurred in that decade, but overall, the world seems to record a relatively rapid decrease in self-employment rates.



Source: ILO web database 1996-2020

However, from the data present in tables 4 and 5, that show the trend of self-employment disaggregated respectively in own-account workers and family workers, is evident that the previously negative trend is largely attributable at the decline of family-worker employment, that figures to be strongly negative for all the regions. Table 4, contrarily at the data for the contributing family workers, shows that own-account workers' slopes remain stable for the two decades examined, and in some case, trends remain positive over the years, as it is observed for Northern Africa. Sub-Saharan Africa and South-Eastern Asia and Pacific confirm higher self-employment rates, on the contrary, central and western Asia, in line with the economic transition that the states present in those regions are experiencing, records a decrease in self-employment in favour of the increase of wage labour (ILO 1996-2020).





Source: ILO web database 1996-2020



Source: ILO web database 1996-2020

### 1.3 Origin of the phenomenon, a view from development theory

This section provides an overview of the origin of the phenomenon of self-employment, using several studies that help to understand the reasons for the incidence of this phenomenon in poor economies. This work has been developed using four studies that have particularly influenced economic literature and have many implications in the development of strategies and decision-making processes.

To start our study, it is useful to deepen the two studies briefly cited in the introduction, as that the Lewis Model and the Harris-Todaro (1970) models, because of their complementarity. Lewis studied the economic structural change and is at the base of economic development literature. It explains the meanings and the drivers that are at the base of growth and development through the concept of structural change, as that when a high productivity sector in an economy expand despite at the shrinking of another characterized by low productivity rates. The Lewis model is properly stylized in Figure 1. Follow the assumptions on his basis and functioning.



Source: Anushree A. 2017

The three assumptions at the basis of the Lewis model (Roland 2016) are the absence of costs in the movement of labour within the sectors, as that labour can be induced to move out of traditional sector at a wage level that corresponding at subsistence wage of the same sector. The second is that the labour market is competitive, as workers are disposed to renounce at part of their wages to obtain a job. The last assumption is that the profits from the modern sector are reinvested only in the same sector.

Rural sector's characteristics' are the absence of new technology and a fixed quantity of capital  $K_A$ . Besides, the marginal productivity of labour is equal to MPL<sub>A</sub>=0 up to a certain point in which the slope flattens becoming horizontal. Therefore it is also useful to specify that at a higher level of agricultural labour, it is possible to transfer labour from the sector without losing agricultural output. The urban sector is characterized by the assumption that the profits are reinvested in the same sector and it implies a positive return to scale, that push the slope of marginal productivity of labour (MPL<sub>U</sub>) upwards, equal to the capital increase. As capital accumulation occurs in the urban sector, the relative wages increase as well, causing an increase in the amount of demanded labour. In a situation in which urban sector offers a slightly higher wage, compared to the rural one, it provides an incentive for farmers to move out of the agriculture sector, and migrate. The rationale at the basis of the model is that as long the MPL in agriculture is zero, it is possible to attract workers to the modern sector at a low wage status (Roland 2016).

However, the Lewis model has been demonstrated an optimistic view of the reality of the developing world. If we see at China, Lewis model is approximately exact in the content and dynamics, however, if we expand the analysis at others developing countries, the outcomes are contrasting. The first issue that the model has met in the reality is the scarcity of capital destined at the urban sector, insufficient to trigger the virtuous mechanism of capital accumulation. The second reason behind this discrepancy is that sometimes the reinvestment is not made in the domestic economy and that phenomenon called "capital flight" occurs. The third reason is attributable to management problems that affect the efficiency of the modern sector, which may also be influenced by labour organizations when setting wages above marginal product value of the industrial sector, by decreasing the accumulation of capital. Lastly, Lewis assumes the perfect employment of the migrants, however, in practice, this appears to not happen (Roland 2016).

It is precisely for the last considerations, that the model of urban to rural migration of Harris and Todaro (1970) can help to represent this issue that occurs in the structural change transition. The Lewis model exactly predicts the migration from rural to an urban area, but overestimate the development of the modern sector, that push migrant into the informal sector. The question that the Harris-Todaro model wants to answer therefore is: why people continue to migrate from the rural area only to be self-employed and take part in the informal sector that lives in shantytown? The answer lies in its features. The first concerns the decision to migrate that results by the comparison between the expected lifetime income in a rural area and the expected lifetime income after the migrating in an urban area. It is also assumed that after a migration, the subject does not go back to the countryside. The second feature is the risk involved in migrating, that consist of the risk to become unemployed once arrived in an urban area. The third one consists of the chance of urban unemployment for excessive migration due to higher wages in the urban area (Roland 2016).

Figure 2, provide to give an en exemplification of the Harris-Todaro model. Below, there is the technical explanation of the functioning of the model, developed consistently with the assumptions mentioned above.



Source: Harris, J. & Todaro, M. (1970)

There are two sectors, agricultural and manufacturing one, in which the relative's income are  $W_A$  and  $W_M$  and workers can move costlessy between the two sectors. We assume also that  $W_M$  is higher and institutionally set ( $W_M > W_A$ ). Under wage flexibility, workers will always look for the higher wage. The condition in which  $W_M = W_A$ , is the equilibrium condition E, in which there would be no unemployment ( $L_A^*; L_M^*$ ). The decision to migrate depends on the expectation rather than the actual wage differential. In fact, workers, to decide to migrate, comparing the expected incomes for a given time horizon in the urban sector with the main

average rural income. The probability to get urban employment is  $p = L_M / L_a - O_M$ , where  $L_a - O_M$  is the area that from  $L_a$  to  $O_M$ , and represent the total urban labour pool. In this context, workers decide to migrate if  $W_A < p^*W_M + (1-p)^*0$  as that:  $W_A < L_M / L_a - O_M^*W_M$ . The indifference equilibrium is reached when  $W_A = L_M / L_a - O_M^*W_M$ , graphically it is visible observing the curve that goes from the point ( $W_A$ ;  $L_A$ ) to ( $W_M$ ;  $L_M$ ), defined as migration indifference curve. It is important to note that  $L_a - O_M$  is higher than  $L_M - O_M$ , that is the effective number of employed in the urban sector. The difference, represented by the space  $L_A - L_M$  is the labour gap of unemployed in the urban sector, that however are employed in non-wage activities, like self-employment, or more generally informal sector (Harris, J., & Todaro, M. 1970).

From the several studies concerning the Lewis model of structural change, it is evident that it not perfectly fits with the reality in the major number of developing countries. However, the Harris-Todaro model seems to fit better with the migrant and employment status in several countries. This can be explained by the several implications that the model involves. The first is certainly the excess of migration, due mainly for the rigidity of urban wages that leads to urban unemployment in equilibrium. Is for this, that the high urbanization rates that are recorded in several developing regions like South Eastern Asia and Sub-Saharan Africa, are the representation of an excess of migration rather than economic development. Urban migration also has consequences in urban planning, in the sense that public services such as public schools, transport and other infrastructures would be underestimated by the growing number of users who want to access them. Another important aspect that leads to an excessive migration is the adverse effect of rural education. Young people that live in the countryside and receive instruction, are more incline to looking better jobs in the urban area. If there are high rates in rural instruction, there will be more and more people that migrate in urban areas. Another important consideration concerns creating new jobs through new wage workplaces, for example with the enlargement of the public sector or in the industry and service sector. It is demonstrated an adverse effect that leads to pushing more individuals to migrate, causing an increase in the unemployment. An example of a policy that can help to face the immigration's issue is the hokou authorizations' system, developed by the Chinese Government to control the rural to urban migration that provides to give an effective limit for people that want to migrate for its high fees. People that although decide to migrate illegally and not pay the high fees imposed by the *hokou* system, have not accessed to basic services like instruction or health insurance. China has also provided to enhance rural job opportunities through the implementation of the "township village enterprises" (TVEs) reform. It consists

of small industries and workshops owned by the state located outside the huge urban conglomerate that aim to absorb the country labour supply. (Roland 2016).

The third study that helps to understand better the origin of self-employment is developed by Robert E. Lucas, Jr. (1978) provides to give an explanation of the different sizes in business using the distribution of person by managerial "talent", and so he studied the division between the different mansions within the firm and the allocation of specific productive factors across mangers. This theory is in contrast with the existing neoclassical thought, for instance, Jacob Viner's classic paper (1932), considered the main reliable and correct paper used from economists to understand the distribution of firms. His theory predicts a unique size distribution within an industry in which each firm have a "U-shaped long-run average cost function" (R. E. Lucas, Jr. 1978, P.509). This implication leads to understand that, in equilibrium, companies adapt their production function in relation to the entry of other companies, adjusting the price to zero profit level. This assumption certainly causes a loss of productivity and efficiency in terms of wasted resources if policymakers want to reduce the monopoly of the biggest firms that dominate the market. Others objections at Viner's classic paper have been attributed by other economists are that changes concerning the products' demand are influenced more by the firm size, rather than the entry-exit of firms, and firm growth is independent of its size (measured in terms of revenues, employees or activities). In contrast to this classic point of view is outlined the Lucas model. Gollin Douglas' article (2008) confirm the validity of the model, studying Japanese historical series data from the Lucas model and its implications for the self-employment's phenomenon in developing countries. Individuals differ in entrepreneurial ability, which Lucas' model assumes as a fixed factor, exogenously distributed and inelastically provided, so people can choose between two ways to generate income, they can work for a wage or they can run a business. If an individual has chosen to become a manager, his income corresponds to the rents resulting from the management of technology, with decreasing returns for variable inputs. The situation of equilibrium is therefore that individuals with a greater capacity of the threshold value, earn more than workers' wages thanks to the technological rents of the managerial positions. Besides, in Lucas' model, wages are getting higher as capital accumulates and therefore wages become more profitable thanks to the accumulation of capital and the related increase in labour productivity. In this context, as capital accumulates, fewer and fewer people choose to become entrepreneurs and run their own company, while the majority prefer wage labour.

After this brief overview of the model, it is easy to understand why there is a high rate of selfemployment and small businesses and family-run businesses in developing countries, while large companies and waged work prevail in developed countries. Douglas's study found evidence of the ability to represent the company's status in developing countries and the importance of various policies that can, however, cause distortions in measuring the phenomenon. For example, Bolivia in 1985 had a GDP of \$ 1,721, almost double that of the Philippines, however, it recorded a relationship between entrepreneurs and workers almost double that of the Philippines. This implication suggests great potential for policy effectiveness in promoting or discouraging self-employment, improving technological progress and development transactions in poor countries (Douglas G. 2008). An in-depth of this topic is present in chapter 2.

The fourth study is developed by Michael Kremer (1993). In his paper, is described a particular production function in which considers the different worker's skills and the capacity to not commit mistakes in the production process. This model, called "the O-Ring economic development model" and has proven effective in representing large differences in income between countries, the highest rates of self-employment in poor countries and the positive correlation between workers' wages in the various occupations within the company.

The assumptions used to compute the O-Ring production function are the following. A firm, during its production process, rules n tasks. For simplicity, it is assumed that each task requires a single worker and n is technologically fixed. The worker's skill is represented by q, that is the percentage of the maximum value of the product if the worker carries out the task. For example, if a q of 85% could be attributable to a worker who has the chance to perform badly the task of 15% and perfectly of 85%. It is also included the capital k, like in a common Cobb-Douglas, however it doesn't affect the workers' skills and is exogenously fixed. The formula of the expected production therefore is:

$$E(y) = k^{\alpha} (\pi_{i=1}^{n} q_i) nB \tag{1}$$

The O-Ring production function differs from the standard one because it assumes that quality cannot be replaced with quantity. This means that it is not possible, for example, to replace two low-skilled workers with a highly skilled one, and for this reason, an increasing return to the skills of the global workforce rather than to the skill of the individual worker is expected. The production functions developed in by Kramer founded many applications to development and to the labour market. It explains, for example, the wage and productivity differentials between rich and poor countries because the model provides a mechanism in which a small

difference in workers' skills influences more than proportionally outcomes and wages. The second implication concerns the fact that rich countries are specialized in the production of more high-tech products. This is explained by the fact that countries with a higher quantity of q, will use more highly skilled labour to specialize production towards processes that require more skills, according to the theory of international specialization. Finally, the model predicts also the difference in business sizes between poor and developed countries. More specifically, small businesses in poor countries are characterized by low n technologies and that the correlation between n and business size implies that businesses from poor countries will be smaller (Kramer M. 1993).

# 2. Public policy and self-employment

## 2.1 Leads self-employment to reduce poverty in developing countries?

In this section, it is discussed whether self-employment can be considered an effective work tool to ensure better living conditions or a tool that people choose to use only because they are "constrained" by the lack of better job opportunities in terms of income. The considerations developed in the study of A. Roy Thurik et al. have been useful to develop this topic. (2008), which aims precisely to clarify this crucial question. The article is developed using data from developed nations, specifically from the 23 OECD countries. However, it can be demonstrated pertinent for the treated classic literature and the important general treated topics, for instance, the productivity of labour, the linkage between self-employment and unemployment, and aspects of human capital like education and entrepreneurship, that can also be adapted effectively to the developing economics for their universal characters. Besides, are present many linkages that refer to classic economic literature and at the Lucas model, that represents the cornerstone of the paper, useful in assessing the effect of self-employment in any macroeconomic perspective for the adaptability of its implications. Successively are reported comments and arguments in sustaining policies to strengthen self-employment.

To develop the analysis is useful to analyse the individual's choice between three main labour status, employed, unemployed and self-employed (Knight, Frank H. 1921). The individual choices among those activities depending on the price of each of them. Is implicit a positive

correlation between self-employment and unemployment, as that increased unemployment rate, leads to an increase of start-up activity because the opportunity cost of starting a firm has decreased (Blau, 1987; Evans and Jovanovic, 1989; Evans and Leighton, 1990; Blanchflower and Meyer, 1994). This particular effect is called the push, refugee or desperation effect. Contrary to this, there is the pull effect, as that the high self-employment rate leads to a decrease in unemployment, also said entrepreneurial effect (Johansson, 2000; Hurst and Lusardi, 2004). From an accurate analysis of the empiric literature, these two opposite effects have almost always shown mixed results.

To develop a correct analysis, it is useful to explain the second effect in more detail, namely, why entrepreneurial activity should have an impact on unemployment. From the literature, Gibrat's law provides an approach to answer this question. Claims that business growth is independent of business size, therefore implies that implementing actions that aim to transfer workers from large to small businesses would have no effect on total employment rates, since Viner assumes that the growth rates of both companies are equal (A. Roy Thurik et al 2008). However, there are more recent studies Evans (1987a, b) and Hall (1987), together with Dunne et al. (1988, 1989), who argue that firm growth is negatively related to firm size and age, meaning that the more new and small a firm is, the higher its growth rates will be. Therefore, they suggest that even at the macroeconomic level, in an economy characterized by small businesses, higher rates of economic growth should be observable. However, data from poor countries show that self-employment rates are inefficiently high (Carree et al. 2002, 2007), showing that high self-employment rates are the result of unfavourable economies of scale in production and R&D and not high entrepreneurial productivity. The technic assumptions useful to link self-employment to unemployment, developed by Carree et al. (2002, 2007) are the following.

We assumed that in a given country i, exists an "optimal level" of self-employment  $E_i^*$ , which depends on the stage of development in which the country is facing. A higher or lower level than  $E_i^*$ , leads always at lower rates of economic growth, in fact, in the first case, there will be a waste in resources in terms of economies of scale and scope, while in the second one, competition levels are too low (A. Roy Thurik et al., 2008).

Besides, the model includes some assumption concerning the unemployment rate  $U_{it}$  in a given country i at time t. It is assumed that is positively affected in the measure that the self-employment rate  $E_{i,t-1}$ , differs from the specific to a country optimal rate in terms of employment generation,  $E_i^*$ . The "optimal" rate of unemployment is equal to  $U_{it}^o$  if the self-

employment rate corresponds at the level  $E_{i,t-1}=E_i^*$ , with added a penalty computed by the difference between  $E_{i,t-1}$  and  $E_i$ , as it is reported in the following formula:

$$U_{it} = U_{it}^{o} + \delta |E_{i;t-1} - E_{i}^{*}|$$
(1)

Where  $\delta > 0$ .

Taking the first difference of the Eq.(1) gives:

$$U_{it}-U_{it-1} = \delta(|E_{i;t-1}-E_i^*|-|E_{i;t-2}-E_i^*|) + \varepsilon_{it}$$
(2)

Where the error term represents the fixed effect of the business cycle. Optimal selfemployment rate is determined by socioeconomic factors and hence takes a long time to change.

To test the effects of the relative quantity of self-employment on unemployment (entrepreneurial effect) is used the equation:

$$U_{it}-U_{i,t-1} = \beta(E_{i;t-1}-E_{i;t-2}) + \varepsilon_{it}$$
(3)

The model needs also to explain the effect in self-employment rate related to unemployment. The complementary formula therefore is:

$$E_{i;t}-E_{i;t-1} = \lambda(U_{it-1}-U_{it-2}) + \eta_{it}$$
(4)

Concerning the equation (3) and (4), it is useful to dwell on the meanings of the coefficients  $\beta$  and  $\lambda$ . Both can be positive or negative.  $\beta$  represents the pull or "entrepreneurial" effect, it is positive in the case in which self-employment rate exceeds the optimum level, and a decrease represents a reduction in unemployment. The contrary happens when is negative.  $\lambda$  is the coefficient that measures the push or "refugee" effect. If it is positive means that people start new self-employment activities to escape unemployment. The ambiguity of the model lies on the opposite expectations of the two coefficient  $\beta < 0$  and  $\lambda > 0$ . Empirical outcomes, developed using a VAR model for 23 OECD countries, show that that the pull, or entrepreneurial effect, is stronger, and therefore the negative relationship of self-employment can be an effective poverty reduction tool. There is to specify that these opposite effects are rather long. It is for this reason that policymakers, to obtain quick employment outcomes, have been slow to discover the important role of entrepreneurship in developed economies, as in developing world, in which self-employment has been seen for decades as a characteristic of poor economies and something to eradicate to solve poverty issues (A. Roy, Thurik et al., 2008).

An important finding that can be effectively adapt to developing economies is the role that plays education on the productivity of entrepreneurial activities. It is recorded that high skilled entrepreneurship allows achieving higher firm growth rates (Congregado et al. 2005). If we consider poor regions of the developing world education and other forms of human capital empowerment is a concrete problem for the lack of investment and access to these services that often are private or located in areas not easily accessible for a large part of the population that live in peripheral areas and for the lack of adequate infrastructure. It is for this reason that in those countries, it should also be promoted financial and business education, financial inclusion and other services, to achieve consequent productivity of labour, and make self-employment an effective tool to fight poverty. An effective solution is represented by the microfinance institutions' activities, topic properly analysed on chapter three.

### 2.2 Consequences in the labour market

Referring to the previous studies, the power of the entrepreneurial effect first, it is clear that policymakers are induced to establish policies to enhance self-employment to reduce poverty and unemployment's issues. However, the study made by Donald Bruce and Herbert J. Schuetze (2004), developed using the data from the US PSID households database, observed that short self-employment experiences, not necessarily lead to an increase in wage relative to a continue wage employment, for both genders. One additional year of self-employment might reduce earnings in the post-self-employment wage sector from 3% to 11% for men. Another important finding concerns the effects that self-employment experience has on successive part-time employment and unemployment status. The probability to become unemployed, after self-employment experience increases from 3% to 10%, and part-time employment by 10% to 30%. These findings are very important to assess the costs and the benefits of the various policy interventions in supporting small business creation. However, it has been tested also the effects that unemployment has in successive employments and it is discovered that it "increases the probability of subsequent part-time employment by 14% to 40%, and the subsequent unemployment by 6% to 25%" (Donald Bruce, Herbert J. Schuetze 2004, P. 596). These outcomes suggest that despite the negative effects analysed, selfemployment demonstrates to be an effective alternative at unemployment, also for the fact that allows conserving human capital for the unemployed waiting to find another job, however not at wage employment, that assures better earning conditions and allays the negative consequences in terms of subsequent part-time employment and unemployment. Therefore, policies should be orientated to promote self-employment only among unemployed, and not wage workers (Donald Bruce, Herbert J. Schuetze 2004).

It is important to remember that all of the foregoing considerations are attributable to a developed nation, and seem to partly suggest caution in promoting self-employment. However, in developing countries, where unemployment and vulnerable employment are widespread, they represent one of the most effective methods to get out of extreme poverty and for this, there is a need for strong political intervention that aims to reinforce these important types of work.

#### **2.3 Public Policies**

To start the wide discussion of public policies in the labour market is good to introduce an overview of the main cornerstones that a policymaker has to follow, for set effective labour laws and to obtain the expected outcomes. Policymaking "rules" are well developed on the World Bank report (2013) that provide the guideline to assure the effectiveness of policies direct to support appropriate policies responses. Policymaking process involves three main macro areas.



#### Source: World Bank report 2013

As is shown in figure 3, at the basis there are the fundamentals, that represent macroeconomic stability, human capital and the rule of law, including the human rights, that are the main conditions that must be ensured to make possible the expansion of private sector. The second component is labour policies, that must be adequate for the labour market's growth, avoiding distortive intervention that could threaten employment growth and that it can instead ensure social protection, especially for vulnerable workers. Lastly, there are the priorities, that means supporting policies' that aim to support particular labour typologies that fit particularly on the context in which they are applied. In this section, we focus on the first and the third component of the pyramid, providing some links with developing nations. Concerning fundamentals, very important is macroeconomic stability, intended as the absence of fluctuation on the price level, exchange rates, interest rate and tax burden (Bosch and Maloney 2010; Fiess, Fugazza, and Maloney 2010), fundamental to empower private investments. Instability can be auto inflicted, as it happens in developing countries when sometimes income support mechanisms are limited and the independence of central banks from the Governments are not assured (Commission on Growth and Development 2008), or can derive come from exogenous sources, for example, by natural disaster or crisis originated

abroad (e.g. wars or epidemics). Another important aspect concerns the stability of the currency and prices. Several resource-rich countries in the developing world have experienced an overvaluation of their currency (Frankel 2012), particularly in the last decade in which it recorded a commodity boom. The same overvaluation occurs when a poor country is largely supported by foreign aid. Afghanistan, for example, received foreign aids from donors for 40% of GDP in the 2010/2011 period (World Bank 2012a). A shock of this type causes weakness in the export sector and further market imperfections. Another labour driver is human capital, understood as a good status in terms of nutrition, health and education which is demonstrated by numerous studies which highlight the connection between human capital, jobs and the relative benefits in terms of labour productivity and overall socio-economic welfare. This very important topic will be covered in more detail in chapter three. Another macroeconomic aspect to consider is the rule of law and respect for rights, that favour the conditions in which private businesses and small businesses can invest and create jobs. Examples of the rule of law are the application of property law, an effective judicial system in combating crime and corruption, efficient health system, laws against child labour, gender equality and freedom of association labour laws (ILO 1998). However, in an unfavourable context in which the informal sector is widespread, the risk is to guarantee these rights only for a minimal part of the work pool, excluding the most vulnerable. Informal worker associations can represent a solution to this issue, by representing the problems of selfemployed workers, opening the confrontation between social partners and promoting information campaigns that aim to educate vulnerable workers how to strengthen their rights.

Setting political priorities for jobs means focusing on a particular type of job which, depending on the national or regional context, has higher productivity and can help more to achieve social cohesion and wealth in the context in which is applied. It is for this reason that, despite the various concerns about autonomous production, highlighted in the previous paragraphs, it is possible to understand why Fields GS (2019) according to the literature and the discussions previously made (characteristics of the labour market, labour productivity, poverty problems, etc.), promotes and supports policies aimed at expanding the wage sector and strengthening self-employment in developing and poor countries. Policy intervention can be grouped into two main clusters. The first, aimed at improving the profitability of individual work activities (Fields G. S. 2019) while the second aims to push self-employed workers towards a more profitable wage. Policies that can raise the returns to the self-employed in their current activities and sectors include: adopting a positive policy that encourages self-employed people and that avoids hampering them, design productive tools (such as electronic

card or solar panels) that can raise the productivity of small economic activities, empower and promote sustainable and profitable farmer labour through the supply of inputs such as fertilizers and other rural services, promote and facilitate capital access at low prices to small non-rural enterprises and lastly, as cited in the previous paragraph, supply education to build business skills, enhancing human capital and small-business productivity. (Gary S. Fields 2019).

These are general policies not all applicable in any context for the heterogeneity present among the different developing economies. Gary S. Fields (2012) sustains that particularly four interventions have proven effective in improving the working conditions of vulnerable workers in developing countries, which are: focus on improving the income capacity of the poorest, creating new jobs outside farms to encourage a transition to higher productivity sectors, provide learning programs for people who want to access at wage employment and finally to make microcredit accessible. An example of the first policy comes from growth path undertaken by Japan and then the Asian tigers (Hong Kong, Taiwan, Singapore, and South Korea), and then the Asian cubs (Indonesia, Malaysia, Philippines, and Thailand), and also from China and Vietnam, that have improved conditions for workers by focusing production on the world exports rather than the only domestic market. Self-employment benefits from this economic choice by the supply chain's expansion, that allowed mass hiring from wage labour and made affordable several government education programmes put in place to support the new production chains. India's National Rural Employment and Guarantee Act (MGNREGA) is an example of the second policy measure. It consists of a minimum of 100 days of employment a year for rural households. It was demonstrated to be an effective tool that has caused considerably improvements in earnings of rural workers. Concerning training programmes for wage employment, an example comes from Mexico Bècate program. It's an education program that supplied important skills to self-employed to satisfy the existing labour demand, like air conditioning repair and lathe operation. This helped to achieve betterpaying labour and more professionalism. Microcredit is developed in the following paragraph to give a wide and more detailed overview of this tool using its literature.

### 2.4 Special focus on Microcredit Loans incentive

This paragraph provides to shows the power of microcredit tool in achieving poverty reduction and other Sustainable Development Goals, using relevant microfinance's reports from interventions developed in China, India and Indonesia.

X. Jia, C. Xiang and J. Huang (2013) have developed an important assessing paper concerning the impact of microcredit on the rural households on off-farm employment by rural workers in China, using data of 1992 households and over the period between 2006-2009. During the last decades, as said in the previous chapter, China is experiencing an economic transaction, and many agricultural workers decided to leave the rural sector to pass at off-farm employment. However, the lack of credit, posed an important limit on entrepreneurship development, causing an increase in both urban and rural unemployment rate. NGO's microfinance, have mostly demonstrated to be an effective tool in boosting smallfirm and self-employment among off-farm unemployed. The two main findings that this study provides are that self-employed in rural China are "young, educated and entrepreneurial" (X. Jia, C. Xiang, J. Huang 2013, P.102), for the fact that NGOs usually provide, combined to the credit service, education programmes to empower labour productivity. The second consequence is the positive externality due to the emigration's limitation from rural to the urban area, very difficult to manage from the State administrations in any part of the world. If we check paragraphs 1.3 and 2.3, we found that those are two of the main characteristic issues of self-employment in developing countries.

Naveen K. Shetty (2008), studied the impact of the poverty-alleviation strategy developed in the Karnataka State (India), that consists on the shift from a traditional credit provision, to a microfinance method, linking at loans also additional services like savings, insurance, adult services, adult literacy and training. Following the provision of the above services, were registered improvements about households conditions such as the establishment of their source of water, access to the electricity grid, creation on their toilet facilities, a considerable increase in household expenditures due at self-employment business empowerment and more confidence and knowledge recorded among the rural poor towards banking and financial institutions and the relative the utilization of the services provided by local organizations like panchayats, MFIs, NGOs staff etc (Naveen K. Shetty, 2008).

Rosintan D.M., Panjaitan-Drioadisuryo and Kathleen Cloud (1999) developed an exhaustive study concerning a Microfinance intervention in Indonesia. They analysed the role of a

microfinance program on low-income women in their economic-social wellness. The program started with the identification of the participants, chosen among those under the poverty line and organized in groups with the same business interests. Groups had to prepare a business plan to submit at the Bank Rakyat Indonesia (BRI) staff for the evaluation. Once approved, the Bank could grant the loan, in relation to the different business' needs. Repayments have been around 97% for the less poor and 80% for the poorest farm households, besides the impact of credit and education of women have recorded optimum outcomes. Women achieved the freedom to move from a community to another, started to contribute to households economy in addition to the housekeeping and childcare. Concerning family's decisions making such as allocation of household money, but also children's education, use of contraception, family size, and participation in community and social events, are recorded large independence rate from their husband. Others improvements are recorded for the child education, nutrition and also in the reallocation of household work, played now also by the husbands, allowing women to concentrate in more remunerative economic activities.

# 3. Microfinance and self-employment

This final chapter deals with the topic of microfinance coherently with the analyses previously developed in the second chapter. In particular, the link that exists between microfinance, self-employment and human capital, with a particular focus on the right to health, and how microfinance can be an effective tool in ensuring the respect of this fundamental human right. In conclusion, a micro-credit intervention project carried out by the firm "Microfinanza S.r.l"<sup>1</sup> will be analysed to provide a further practical example of how this tool can act effectively in promoting efficient self-employment and obtaining positive externalities.

### 3.1 Microfinance, self-employment and human capital

Many assessments of the impact of microfinance activity in developing countries have recorded excellent results in poverty reduction, describing microfinance as the most reliable tool for achieving pragmatic and long-term economic results through financial inclusion (The World Bank 2018). In recent decades, microfinance institutions and other agencies have started to pay attention to basic social services, including health, from which a large part of the population is excluded. This growing focus of the microfinance sector on health services has multiple justifications. To understand and confirming this particular link is useful to quote the asset theory and the resilience theory (Ssewamala et al., 2012). The theory of assets supports the idea that guaranteeing economic opportunities has a fundamental role in the psychological and socio-economic well-being of individuals (Sherraden M. 1990). Resilience theory, on the other hand, provides that individual capacity and family resources, like the family home or company, allow mitigating the consequences of negative events that can occur during life (Fergus S, Zimmerman M. 2005). It is for this reason that economic opportunities, health and human capital can be considered complementary elements, understanding that the presence of one depends on the presence of the other. A pragmatic example of this complementarity comes from the study of Ssewamala et al. (2012) who evaluated a microfinance intervention on the level of depression of children orphaned by AIDS in Uganda. It has been demonstrated that providing mental health and credit services, combined with saving's and financial education, constantly reduces the depression and a poverty level of

<sup>&</sup>lt;sup>1</sup> Microfinanza S.r.l is an Italian company with almost twenty years of experience in the field of financial inclusion and access to credit. It collaborates with international institutions and organizations and manages missions in many developing regions around the world, using its own methods and tools to manage and evaluate the results, developed over many years of activity.

an AIDS-affected family and ensuring the conservation and improvement of human capital in a long time term. It is also worth adding the fact that microfinance institutions operate at a local level and are present in a widespread manner on the territory. For this reason, people who live far from official institutions, usually located in an urban area and unable to provide health and business services to those who live in peripheral areas, can also serve people better understanding the heterogeneity of the population that benefits from both businesses and health services.

From the point of view of the business financed by the MFI and the management of credit risk, it is necessary to underline that many reports show that the illness of customers and the health care costs of relatives can lead directly to the bankruptcy of small businesses with consequent default of the loan. Finally, it is important to underline that an important part of microfinance loans supports health care costs, such as in India, where it is estimated that around 10% of loans are allocated to health care costs (Saha S. 2011). This again emphasizes the interconnections between poverty and health, where poor health increases the risk of falling into short-term poverty and, conversely, low income is likely to cause poor health. MFIs also have an important role in empowering human capital through multiple channels, education in the first place, very important for the consideration analysed in chapter 2. It is for this reason that educational activities, both financial and health, carried out by MFI and other development institutes represent a milestone in the success of many small businesses in developing countries. In addition, by improving the health of its borrowers, the institution of microfinance reduces the potential to apply for a loan for healthcare expenses and increases the potential to borrow money for productive and income-generating activities. Microfinance institutions can also apply commissions or other charges on health packages and at the same time trigger a virtuous circle in which all actors benefit from both health and well-being

From the customer's point of view, integrating health services with traditional loans has many positive effects on their lives. Some evidence of these consequences comes from some randomized control studies in the area covered by microfinance in South Africa (Kim J. et al. 2007). The main positive externalities are economic empowerment and the reduction of gender-based violence. In addition, many reports of financial and healthcare packages report positive impacts on income, empowerment and health knowledge (Pronyk PM., Hargreaves JR, Morduch J. 2007), enabling people to better understand health concerns and the need to protect this fundamental right. In addition, other studies have reported that health education, delivered in parallel to financial education meetings provided by MFIs (Leatherman S., Dunford C. 2010), allows behavioral changes among participants, leading to positive impacts

on children's health and mothers and on the prevention of infectious diseases, in particular the diseases of malnutrition and diarrhea, strongly correlated with disease and infant mortality (Johnson S., Ben R. 1997; Marcus RBP., Harper C. 1999).

Some example of interventions that can be developed by microfinance institutions are reported hereunder.

Client needs	<b>Example of intervention</b>
Cash to cover health expenses	Health savings and/health loans
Access to affordable medicines	Linkages to health products providers
Need of competent health workers	Linkages to healthcare providers
Access to predictable health coverage	Prepaid health insurance plans
Knowledge of good health practices	Health education

Source: Adopted from Freedom from Hunger

## 3.2 The Microfinanza's increasing savings scheme

Microfinanza Srl's mission is to increase financial inclusion and make it permanent, globally. It does this by supporting microfinance and financial inclusion organizations and their institutional partners to improve their economic, social and environmental performance, through technical assistance, training and impact assessment. This section shows a simulation of a pilot project for Sudan, developed by Microfinanza. It aims to improve the living conditions of users by linking the financing of self-employment to health services through an implementation of their savings capacity. In fact, it must be specified that health services are present in Sudan, however relatively expensive due to their private nature.

## **3.3 Methodology**

#### Introduction

The scheme is structured starting from an initial condition at time zero, corresponding to the current situation of ten thousand Sudanese citizens. They are hypothetically divided into three different population clusters, using different Purchase Power Parity (PPP) bands converted in US dollars. Population sample is divided as follows:

- 1. 5000 Sudan citizens that live under the PPP of 1,90 USD per day defined Extremely Poors
- 2. 2500 Sudan citizens that live under the PPP of 3,20 USD per day defined Poors
- 3. 2500 Sudan citizens that live under the PPP of 5,50 USD per day defined Less Poors

People that live with more than 5,50 USD per day are not considered because are supposed to be self-sufficient and included in the traditional financial circuit.

The population has been divided following a study concerning the income distribution in the Sudan population. To develop this task, it has been useful to build a Lorenz Curve and calculate the relative Gini Index, which resulted to be approximately around 34. The curve is reported as follows, built using data from The World Bank PovcalNet database (2014).



Lorenz Curve Sudan

Source: The World Bank PovcalNet database (2014)

#### <u>Step 1</u>

The first step consists in computing the maximum saving capability that each group can achieve in a given year, considering that each member belonging to group 1 and 2 has a household composed of 6 members, while those belonging to group 3 only 5. The rationale

behind this family member composition is that with more income, the opportunity cost to have a child increases (Roland 2016), and the Sudanese average household size is 5,9 component per household (M. Bauer 2019). Concerning savings, it is assumed that each household member can save 5% of the total revenue each year.

It is important to note that only the second and the third clusters can save, while the first one consumes all the available income as they barely reach the extreme poverty threshold.

The formula to compute the revenue:  $Y_i=y(per day)^*365^*n$ . household The formula to compute the relative saving:  $S_i=Y_i^*5\%$ 

#### Step 2

The second step regards the different mechanisms that can be applied to each cluster to improve their financial and investing capacities finalised to increase the general wealth level in their entrepreneurial and self-employment activities. To be as clear as possible, the three different financial mechanisms are treated separately as follows.

- Extremely poor are completely financed by external resources, for its extremely poverty characteristics through the Zakat mechanism and total injection of funds equal to 1.500.0000 USD. Zakat is the third pillar of Islam. It obliges participants to donate part of the wealth produced (2.5%) to be allocated to support the poor of the Islamic community (nzf.org 2020).
- 2. Poors are financed through the creation of a specific credit fund that provides financial leverage 1:2 on the amount of savings collected by each family unit. Doing so their demand capacity in loans will be up to three times their total savings. In this case, the amount of total external resources is 2.628.000 USD, corresponding to the whole fund capacity.
- 3. The mechanism for the less poor is based on contracting with a Microfinance institution with its funds. However, to empower and assure the disbursement of funds for this category it has been chosen to intervene through a guarantee fund that covers 80% of the credits disbursed. It is necessary to specify also that credits for this cluster use leverage of 1:3, allowing to finance four times the savings set aside by the population. The rationale behind the guarantee fund creation lies in the fact that Microfinance institution already has its funds, and it is not necessary to finance the whole additional leverage with external resources. An injection of money covering the large part of a possible credit default (fixed at 80%) is sufficient. This concept is enforced by the fact that microfinance

institutions apply higher interest rates, and so they already receive a premium for the risk of credit default.

The total of the external resources to run the three mechanisms is 5.259.500 USD and the amount of total resources mobilized, as that the money that individuals have saved plus which provided in the form of loans through the different mechanisms (Zakat and leverage), is 14.165.500 USD.

#### Step 3

In this section are presented the steps and assumptions at the base of the increasing saving scheme elaborated by Microfinanza, to show the effects of the investment on the long-run.

The scheme is built on cycle or period. At cycle one, the starting point is the savings calculated using the revenue previously computed. At each cycle, savings increase in the extent that the mark-up, derived from the investment in productive activities, increases.

In the following paragraphs are given the formulas to compute the individual investment capital base that corresponds at the total investment in client's business activity, markup put aside for health expenditure and the saving at time t+1 for each population cluster. The simulation is built for a total of 5 cycles.

-Calculation of the investment base is computed using as a base the household saving added of the external resources. For the first cluster, it is used the funds provided by the Zakat mechanism, in fact extremely poor is supposed to be unable to save, and the investments in their businesses are financed entirely by external resources. Concerning the other ones, the increase is calculated using the leverage effects explained in details in Step 2.

Group 1  $K_1$ =K.Zakat Group 2  $K_2$ =S<sub>2t</sub>\*3 Group 3  $K_3$ =S<sub>2t</sub>\*4

#### -Calculation of different markups

Mark-ups are calculated using different multipliers, 30% for the extremely poor, 20% for the poor and 15% for the less poor. The rationale at the base of this assumption is that the first group is mainly self-employment or with low professionalism level, and so individuals can apply the largest mark-up for the basic nature of the business (e.g retail commerce of food) and from the absence of financial costs applied by the mechanism provided to this group. For groups two and three, the profit margin narrows since higher interest rates are applied respectively by the fund and the Microfinance institutions, and for the nature of the businesses

that are more articulated and regulated. For these reasons, mark-ups for group 2 and 3 are considered relatively lower. Formulas are reported as follows.

Group 1 
$$M_1=K_1*0,3$$
 Group 2  $M_2=K_2*0,2$  Group 3  $M_3=K_3*0,15$ 

#### -Calculation of the savings relatively at each cycle

The total savings resulting at the end of each cycle is the result of the last year's saving, plus the markup minus the provision for health expenditures. The project supposes that for each cycle should be set aside a certain percentage of the saving's increase to destine at health services, to achieve the positive externalities previously pointed out. This share ( $\beta$ ) is fixed at 50% for the firsts three cycles, and for the other two is fixed at 60% of the additional markup, for the fact that the poor and the less poor have more saving capacity.

So, the formula used to compute the resources set-aside for health expenditure (HS) at time t is:

$$HS_{it} = M_{it} * \beta_{it}$$

And the formula for the saving at time t+1 is:

$$S_{t+1}=S_{it}+M_{it}-HS_{it}$$

Which is the savings accumulated at time t, plus the markup and minus the money set aside for the health expenditure at time t.

#### **3.4 Conclusion**

This paragraph aims at showing the different outcomes for the clusters in terms of total savings generated through the investments and provision for health care services.

To verify if the scheme is effective, it has been chosen to compare the different outcomes at the end of business cycle five, for the respective clusters, with the medium out-of-pocket expenditure of a Sudanese citizen, retrieved from the website of the World Health Organization (2017). The result shows that 72,5% of the total health expenditure (194 USD), and is therefore 140,65 USD per capita. To be realistic, the expenditures have been adapted to each cluster, assuming that extremely poor spend each year 60% of the average out-of-pocket expenditure. For the other two groups, the percentages used are respectively 80% and 100%.

With these important considerations, it is possible to affirm that at the end of cycle five, the scheme allows covering respectively 60%, 50% and 67% of the out-of-pocket adjusted expenses.

To graphically show the outcomes resulting from the simulation's computations for each population cluster, it has been decided to build different break-even point charts. Results are shown graphically as follows.





From the charts is evident that the total saving per capita, during the five business cycles, growing exponentially to equal and finally overcome the adjusted out-of-pocket expenditure. The equation requires respectively zero cycles for the extremely poor, that receive an injection of external resources relatively higher, three cycles and a half for the poor and just more than two business cycle for the less poor. Concerning the saving set aside for health expenditure, it is not possible to affirm that is sufficient to cover the out-of-pocket expenditure, also after five business cycle. However, are visible improvements in health expenditure capacity, that follow the trend of total savings, and destined to grow more and more in a long-run perspective. To conclude, it is possible to affirm that the Microfinanza increasing saving scheme described above, allows improving both wealth and health of the Sudanese people, reducing the credit risk through a virtuous and sustainable economic circle in which the principal actor is the self-employment supported by additional inputs (healthcare and education) in sustaining poor communities to achieve the respect of the basic human rights and achieve the Sustainable Development Goals.

# **Bibliography**

A. ROY THURIK et al., 2008. Does self-employment reduce unemployment?, Journal of Business Venturing, Volume 23, Issue 6, Pages 673-686.

ANUSHREE A. 2017, March 4. Models of Surplus Labour: Economic Models: Economics.

BLANCHFLOWER et al., 1994. A longitudinal analysis of young entrepreneurs in Australia and the United States. *In:* A. ROY THURIKET et al., 2008. Does self-employment reduce unemployment?, Journal of Business Venturing, Volume 23, Issue 6, Page 673-686.

BLAU, DAVID M., 1987. A time series analysis of self employment in the United States. *In:* A. ROY THURIKET et al., 2008. Does self-employment reduce unemployment?, Journal of Business Venturing, Volume 23, Issue 6, Pages 673-686.

BOSCH AND MALONEY 2010; FIESS, FUGAZZA, AND MALONEY 2010. *In:* THE WORLD BANK, 2012. World Development Report 2013: Jobs. Washington, DC: World Bank. Pages 256-313

CARREE, et al., 2007. The relationship between economic development and business ownership revisited. *In:* A. ROY THURIKET et al., 2008. Does self-employment reduce unemployment?, Journal of Business Venturing, Volume 23, Issue 6, Pages 673-686.

CARREE, MARTIN, 2002. Does unemployment affect the number of establishments? A regional analysis for U.S. states. *In:* A. ROY THURIKET et al., 2008. Does self-employment reduce unemployment?, Journal of Business Venturing, Volume 23, Issue 6, Pages 673-686.

COLLINS ENGLISH DICTIONARY (n.d.). Resell definition and meaning. Available on: https://www.collinsdictionary.com/dictionary/english/resell [Access date: 03/05/2020]

COMMISSION ON GROWTH AND DEVELOPMENT 2008. *In:* THE WORLD BANK, 2012. World Development Report 2013: Jobs. Washington, DC: World Bank. Pages 256-313.

CONGREGADO et al. 2005. Determinantes de la Oferta de Empresarios. *In:* A. ROY THURIKET et al., 2008. Does self-employment reduce unemployment?, Journal of Business Venturing, Volume 23, Issue 6. Pages 673-686.

DONALD BRUCE, HERBERT J. SCHUETZE, 2004. The labor market consequences of experience in self-employment, Labour Economics, Volume 11, Issue 5, Pages 575-598.

DOUGLAS GOLLIN, 2008. Nobody's business but my own: Self-employment and small enterprise in economic development, Journal of Monetary Economics, Volume 55, Issue 2, Pages 219-233.

DUNFORD C. 2006. How microfinance can work for poor. The case for integrating microfinance with education and health services. Freedom from Hunger Newsleter 2006 *In:* SAHA, S. 2011. Provision of health services for microfinance clients: Analysis of evidence from India. International Journal of Medicine and Public Health. Vol. 1, Issue 1, Pages 1-5.

DUNNE et al., 1989. The growth and failure of US manufacturing plants. *In:* A. ROY THURIKET et al., 2008. Does self-employment reduce unemployment?, Journal of Business Venturing, Volume 23, Issue 6, Pages 673-686.

DUNNE, et al., 1988. Patterns of firm entry and exit in U.S. manufacturing industries. *In:* A. ROY THURIKET et al., 2008. Does self-employment reduce unemployment?, Journal of Business Venturing, Volume 23, Issue 6, Pages 673-686.

EVANS, DAVID S., 1987a. The relationship between firm growth, size and age: estimates for 100 manufacturing industries. *In:* A. ROY THURIKET et al., 2008. Does self-employment reduce unemployment?, Journal of Business Venturing, Volume 23, Issue 6, Pages 673-686.

EVANS, DAVID S., 1987b. Tests of alternative theories of firm growth. *In:* A. ROY THURIKET et al., 2008. Does self-employment reduce unemployment?, Journal of Business Venturing, Volume 23, Issue 6, Pages 673-686.

EVANS, et al., 1989. Estimates of a model of entrepreneurial choice under liquidity constraints. *In:* A. ROY THURIKET et al., 2008. Does self-employment reduce unemployment?, Journal of Business Venturing, Volume 23, Issue 6, Pages 673-686.

EVANS, et al., 1990. Small business formation by unemployed and employed workers. *In:* A. ROY THURIKET et al., 2008. Does self-employment reduce unemployment?, Journal of Business Venturing, Volume 23, Issue 6, Pages 673-686.

FERGUS S, ZIMMERMAN 2005. M. Adolescent resilience: A framework for understanding healthy development in the face of risk. *In:* FRED M. SSEWAMALA ET AL. 2012. The Impact of a Comprehensive Microfinance Intervention on Depression Levels of AIDS-Orphaned Children in Uganda, Journal of Adolescent Health, Volume 50, Issue 4, Pages 346-352.

FIELDS, G. S. 2018. Confronting Africa's Employment Problem. Background Paper Prepared for the African. *In:* FIELDS, G. S., 2019. Self-employment and poverty in developing countries. The right policies can help the self-employed to boost their earnings above the poverty level and earn more for the work they do. Cornell University, USA, and IZA, Germany. Pages 1-10.

FIELDS, G. S., 2012. Working Hard, Working Poor. *In:* FIELDS, G. S., 2019. Selfemployment and poverty in developing countries. The right policies can help the selfemployed to boost their earnings above the poverty level and earn more for the work they do. Cornell University, USA, and IZA, Germany. Pages 1-10.

FIELDS, G. S., 2019. Self-employment and poverty in developing countries. The right policies can help the self-employed to boost their earnings above the poverty level and earn more for the work they do. Cornell University, USA, and IZA, Germany. Pages 1-10.

FRANKEL 2012. *In:* THE WORLD BANK, 2012. World Development Report 2013: Jobs. Washington, DC: World Bank. Pages 256-313.

FRED M. SSEWAMALA, TORSTEN B. NEILANDS, JANE WALDFOGEL, LEYLA ISMAYILOVA 2012, The Impact of a Comprehensive Microfinance Intervention on Depression Levels of AIDS-Orphaned Children in Uganda, Journal of Adolescent Health, Volume 50, Issue 4, Pages 346-352.

HARRIS, J., & TODARO, M. 1970. Migration, Unemployment and Development: A Two-Sector Analysis. *The American Economic Review*, 60(1).

HARRIS, J., & TODARO, M. 1970.. Migration, Unemployment and Development: A Two-Sector Analysis. *In*: ROLAND GÉRARD, 2016. Development economics. Pages 123-127

HURST, E., LUSARDI, A., 2004. Liquidity constraints, household wealth and entrepreneurship. *In:* A. ROY THURIKET et al., 2008. Does self-employment reduce unemployment?, Journal of Business Venturing, Volume 23, Issue 6, Pages 673-686.

ILO 1998. *In:* THE WORLD BANK, 2012. World Development Report 2013: Jobs. Washington, DC: World Bank. Pages 256-313.

INTERNATIONAL LABOUR ORGANIZATION 1996-2020. Definition and Metadata [database]. Available on: https://www.ilo.org/wesodata/definitions-and-metadata/vulnerable-employment [Access date: 03/05/2020]

JOHANSSON, E., 2000. Self-employment and liquidity constraints: evidence from Finland. *In:* A. ROY THURIKET et al., 2008. Does self-employment reduce unemployment?, Journal of Business Venturing, Volume 23, Issue 6, Pages 673-686.

JOHNSON S, BEN R. 1997. Microfinance and Poverty Reduction. Oxfam 1997. *In:* SAHA, S. 2011. Provision of health services for microfinance clients: Analysis of evidence from India. International Journal of Medicine and Public Health.

KIM J. ET. AL 2007. Understanding the Impact of a Microfinance-Based Intervention on Women's Empowerment and the Reduction of Intimate Partner Violence in South Africa. Am J Public Health. *In:* Saha, S. 2011. Provision of health services for microfinance clients: Analysis of evidence from India. International Journal of Medicine and Public Health.

KNIGHT, FRANK H., 1921. Risk, Uncertainty and Profit. *In:* A. ROY THURIKET et al., 2008. Does self-employment reduce unemployment?, Journal of Business Venturing, Volume 23, Issue 6, Pages 673-686.

KREMER M. 1993. "The O-Ring Theory of Economic Development." The Quarterly Journal of Economics, vol. 108, no. 3, pp. 551–575.

LEATHERMAN S, DUNFORD C. 2010. Linking health to microfinance to reduce poverty. Perspective. Bull World Health Organ. *In:* SAHA, S. 2011. Provision of health services for microfinance clients: Analysis of evidence from India. International Journal of Medicine and Public Health.

LEATHERMAN S, METCALFE M, GEISSLER K, DUNFORD C. 2012. Integrating microfinance and health strategies: examining the evidence to inform policy and practice. Health Policy Plan. 27(2):85-101.

LUCAS, R., 1978. On the Size Distribution of Business Firms. The Bell Journal of Economics, 9(2), 508-523.

MARCUS RBP, HARPER C. 1999. Money Matters: Understanding Microfinance. Save the Children. *In:* SAHA, S. 2011. Provision of health services for microfinance clients: Analysis of evidence from India. International Journal of Medicine and Public Health.

MICHAEL BAUER (2019). Average Household Size in Sudan. ArcGIS.com

MICROFINANZA S.R.L (2020)

NATIONAL ZAKAT FOUNDATION 2020. What is Zakat? Available on: <a href="https://nzf.org.uk/about-zakat/what-is-zakat/">https://nzf.org.uk/about-zakat/</a> https://nzf.org.uk/about-zakat/</a>

NAVEEN K. SHETTY, 2008. The microfinance promise in financial inclusion and welfare of the poor: Evidence from India.

OECD Glossary of statistical Terms 2003.

PRONYK PM, HARGREAVES JR, MORDUCH J. 2007. Microfinance Programs and Better Health: Prospect for Sub-Saharan Africa. JAMA2007. *In:* SAHA, S. (2011). Provision of health services for microfinance clients: Analysis of evidence from India. International Journal of Medicine and Public Health. Vol. 1, Issue 1, Pages 1-5.

ROLAND GÉRARD 2016. Development economics. London: Routledge.

ROSINTAN D.M. PANJAITAN-DRIOADISURYO, KATHLEEN CLOUD 1999. Gender, self-employment and microcredit programs. An Indonesian case study. The Quarterly Review of Economics and Finance, Volume 39, Issue 5, Pages 769-779.

SAHA, S. (2011). Provision of health services for microfinance clients: Analysis of evidence from India. International Journal of Medicine and Public Health. Vol. 1, Issue 1, Pages 1-5.

SHERRADEN M. 1990. Stakeholding: Notes on a theory of welfare based on assets. *In:* Fred M. Ssewamala et al. 2012. The Impact of a Comprehensive Microfinance Intervention on Depression Levels of AIDS-Orphaned Children in Uganda, Journal of Adolescent Health, Volume 50, Issue 4, Pages 346-352.

THE WORLD BANK 2012. World Development Report 2013: Jobs. Washington, DC: World Bank. Pages 256-313.

THE WORLD BANK 2014. PovcalNet database [database]. Available on <a href="http://iresearch.worldbank.org/PovcalNet/home.aspx">http://iresearch.worldbank.org/PovcalNet/home.aspx</a> [Access date: 03/05/2020]

THE WORLD BANK Oct 02, 2018. Financial Inclusion. Financial inclusion is a key enablertoreducingpovertyandboostingprosperity.Availablefrom<https://www.worldbank.org/en/topic/financialinclusion/overview>[Accessdate:17/06/2020]

VINER, J., 1932. Cost Curves and Supply Curves. *In:* LUCAS, R. 1978. On the Size Distribution of Business Firms. The Bell Journal of Economics, 9(2), 508-523.

W. ARTHUR LEWIS, May 1954. Economic Development with Unlimited Supplies of Labour. *In:* ROLAND GÉRARD, 2016. Development economics. Pages 116-122

WORLD BANK 2012a. *In:* THE WORLD BANK, 2012. World Development Report 2013: Jobs. Washington, DC: World Bank. Pages 256-313.

WORLD HEALTH ORGANIZATION 2017. Global Health Expenditure Database [database]. Available from <a href="https://apps.who.int/nha/database/ViewData/Indicators/en">https://apps.who.int/nha/database/ViewData/Indicators/en</a> [Access date: 03/05/2020]

XIANGPING JIA, CHENG XIANG, JIKUN HUANG, 2013. Microfinance, selfemployment, and entrepreneurs in less developed areas of rural China Economic Review, Volume 27, Pages 94-103.