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**Inflation as a bad incentive to
self-employment**

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Abstract

This work develops an occupational choice model with the aim of studying the relationship between inflation and creation of self-employment. Particularly, it studies the decision of an agent between being a waged employee or being an entrepreneur, and how this decision changes according to the level of inflation in the economy. The model distinguishes between two types of firm owners: low skilled (subsistence entrepreneurs) and high-skilled (transformational entrepreneurs). While the last ones are thought to develop employment and economic growth, the first ones create their firms to subsist. According to the model, inflation creates an incentive to start a new firm for both types of entrepreneurs, but this effect is stronger for low-skilled entrepreneurs. Finally, this incentive to entrepreneurship has a negative impact in the economy.

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¹Matías Julián Garibotti, Universidad de San Andrés, Vito Dumas 234, Victoria, Provincia de Buenos Aires, Argentina. Email: garibottim@udesa.edu.ar. Firstly, I would like to thank God for His Grace and Faithfulness. I would also like to thank my mentor Federico Weinschelbaum for his eagerness to help, for guiding me throughout this process, and for motivating my interest in this field. I would like to thank Christian Ruzzier for awakening my interest in Economics. I am specially thankful to my parents Cora and Guillermo for their daily love and support, none of these would have been possible without them. My gratitude is also to my siblings Esteban, Guillermo and Cecilia, and my sisters in law Constanza and Sabrina for always being by my side. I would also like to thank all my friends for making me a better person. The authorship of the contents described in here is entirely mine and I make responsible for any mistake.

1 Introduction

The importance of entrepreneurs in economic growth has been largely debated in the literature. New firms are thought to be crucial players in the development of an economy as they foster competition and bring about market growth². Schumpeter would talk about a process of “creative destruction” in which new firms can displace obsolescent ones. The first ones are supposed to bring new technologies and ideas, satisfying the demand of a new market (or expanding the existing demand), while firms unable to update will tend to disappear. Based in these ideas, most governments and politicians seek to enhance entrepreneurship and make policies that foster the creation of new firms.

However, a new business does not always come together with the virtues previously mentioned. The decision of a person to become self-employed is determined by multiple factors and, most of the times, these decisive factors are not related to an innovative idea. Most business owners create their firms in response to bad working conditions in previous jobs, the wish of “being one’s own boss” or even the difficulty of finding a new job. Usually, when employees want to improve their working conditions, they are not able to do it in their current jobs. Hence, they seek for new working options, and to start their own business comes up as an appealing alternative. According to the Global Entrepreneurship Monitor (GEM), 43% of Latinamerican entrepreneurs start their firms out of necessity (Poschke, 2013). In these cases, new firms are not created in the Schumpeterian tradition, with the aim of bringing something new to the market and creating new jobs. Contrary to that, these firms are created as a response to grim working conditions or as a mean of subsistence and this kind of motivation will hardly lead to innovation and economic development.

It is a fact that entrepreneurs are different between each other³, but most of the times they are treated as an homogeneous group. Schoar (2010) argues that policies aimed to foster entrepreneurship affect differently to each entrepreneur and treating them equally can lead to an adverse impact on the economy. In order to understand how to develop good policies, she believes crucial to differentiate between transformational and subsistence entrepreneurs. While the last ones would become self-employed to satisfy

²Wennekers and Thurik (1999)

³Hamilton (2000) shows that the ratio between earnings at the 75th and the 25th percentile of entrepreneurs’ earnings distribution is at least 50% larger than the same ratio for employees’ earnings distribution. Cagetti and De Nardi (2006) provide statistics in line with this result.

their own subsistence income, transformational entrepreneurs create their firms with the objective of growing beyond their own needs and providing jobs and income for others. Differentiating between these two groups, and knowing that the transitions from subsistence to transformational entrepreneurs are almost nonexistent, will permit to understand which policies lead to economic development and which ones only help entrepreneurs to subsist.

Poschke (2013) provides an occupational choice model that explains heterogeneity between entrepreneurs and analyzes how different economic environments and policies affect the decisions of these entrepreneurs. In the model, the wage of an employee is a linear function of his ability, while the return to being an entrepreneur is assumed to be convex in the individual's ability. This leads to the result that both the least skilled and the most skilled individuals will become self-employed, while the middle-skilled ones will rather choose being an employee. The division between low-skilled and high-skilled entrepreneurs is what the author uses to explain heterogeneity among firms, and to analyze the reactions of these entrepreneurs to changes in the economic environment. In particular, he finds that policies affecting negatively to high-skilled entrepreneurs can indirectly have a strong effect on entry by low-skilled entrepreneurs, diminishing the presence of large firms in the economy and increasing the quantity of small firms.

The entrance of transformational entrepreneurs can be discouraged by a myriad of features from the economic environment, and most of the times, these features will simultaneously motivate low skilled agents to become self-employed. Tight regulations for the labor market and the difficult access to capital are some examples of this situation, as they shrink high-skilled entrepreneurs' profit while low ability entrepreneurs will not be affected. What is more, in the general equilibrium firms will be smaller and wages will fall, resulting in a rise of subsistence entrepreneurship.

This work develops an occupational choice model with the aim of analyzing the effect of an inflationary environment in the decision between being an employee or running your own firm. The existence of inflation along with nominal wage rigidities results in a decrease in the real earnings of employees. On the other hand, firm owners usually have the possibility to change the prices of the products they sell when they want. Hence, inflation affects differently to individuals' real earnings depending on their working condition.

An inflationary environment will then stimulate migration of wage earners to en-

entrepreneurship, and this incentive will be stronger for individuals with lower income. The model presented here assumes risk averse agents whose earnings will depend (increasingly) on their human capital and, when they are entrepreneurs, on their managerial capital. Consequently, the decision between being an employee or an entrepreneur will depend on each individual's endowment of human and managerial capital. Inflation will motivate employees to become entrepreneurs, but this effect will be more effective for low human capital agents, as their wages suffer.

The rest of this work is organized as follows. Section 2 introduces the setup model and Section 3 reports the results of the model in both inflationary and non-inflationary environments. Finally, Section 4 presents the conclusion.

2 The Model

The economy modeled in this work is composed by a continuum of agents and the government. Every agent receives an endowment of abilities and according to this they maximize their utility by choosing whether to work as salaried employees or by running their own business. The government, for its part, collects taxes and provide a public good that represents a non-pecuniary benefit for all agents.

Consumption There is only one good in this economy which price in moment t is P_t . The utility received for consuming this good is given by $\nu(y_t^i)$, where y_t^i is the quantity of the good consumed by agent i in moment t , and $\nu(\cdot)$ is an increasing and strictly concave function. Formally:

$$\nu'(y_t^i) > 0$$

$$\nu''(y_t^i) < 0$$

$$\forall y_t^i$$

In this economy it is not possible to save money to use in the future. Therefore, as y is the only good in the economy, agents will allocate all of their income in the consumption of y . Let Y_t^i be the nominal income of agent i , then for every t consumption will be:

$$y_t^i \equiv \frac{Y_t^i}{P_t} \quad \forall t \quad (2.1)$$

Agents The continuum of agents i is divided into two: a proportion l are low human capital agents, while a proportion $h = (1 - l)$ are high human capital agents. Each one of these agents receives an endowment of abilities $A^i = (\omega^i, m^i)$, where ω^i represents the level of human capital of agent i and m^i is his managerial capital. In this model, human capital represents the ability of an agent to produce something, while managerial capital is the ability to lead a business and sell that production.

Typically, low human capital agents have the same level of human capital $\omega^i = \omega_L$, while high human capital agents will have a different level of human capital $\omega^i = \omega_H$, also equal within the group:

$$\begin{aligned} \omega^i &\in \{\omega_L; \omega_H\} \\ \omega_L &\in (0, 1) \quad \omega_H \in (0, 1) \\ \omega_L &< \omega_H \end{aligned}$$

At the same time, each one of this agents i will receive a certain level of managerial capital $m^i \in (0, 1)$. The distribution of m^i is different for each group of agents, and will be given by density functions $g_L(m^i)$ in the case of low human capital agents, and by $g_H(m^i)$ for high human capital agents.

$$g_j(m^i) > 0 \quad \forall m^i, \quad j = L, H \quad (2.2)$$

$$\int_0^1 g_L(m^i) dm^i = l \quad ; \quad \int_0^1 g_H(m^i) dm^i = h \quad (2.3)$$

Employment Each agent will have to choose between entering into the labor market or starting his own business. The real wage that each agent receives for being an employee is ω^i when there is no inflation. However, when the price level changes between periods, this real earning will be diminished. We will assume that the nominal wage for low human capital agents will be delayed δ_L periods, and δ_H periods for high human capital

agents. This means that the nominal wage perceived by i in moment t depends on the price level of moment $t - \delta_i$. In order to simplify notation we will assume that $\delta_H = 1$, and that $\delta_L = \delta > \delta_H$. This last assumption proposes that high human capital agents have a stronger bargaining power and their salaries faster than low human capital agents' salaries. While high-skilled employees tend to work formally, low-skilled ones are prone to work in the informal sector⁴ and their wages are less indexed than high-skilled agents' wages.

At the same time, we make the simplifying assumption that all the employees work formally, meaning that every employed agent will be levied with a payroll tax τ . Let W_t^i be the nominal available income of agent i in moment t :

$$W_t^i = \omega^i (1 - \tau) P_{t-\delta^i} \quad i = L, H \quad (2.4)$$

Entrepreneurship On the other hand, if an agent i decides to run his own business, this business will be successful with probability m^i and with probability $(1 - m^i)$ will fail. When the project is successful, the agent will receive a payment that depends on his human capital and, unlike wages, the nominal value of this payment will respond immediately to price changes.

$$B_t^L = f(\omega^L) P_t \quad (2.5)$$

$$B_t^H = f(\omega^H) (1 - \tau) P_t \quad (2.6)$$

When the business of agent i is successful his available income will be B_t^i , where $f(\cdot)$ is an increasing function and convex in ω^i , meaning that $f'(\cdot) > 0$ y $f''(\cdot) \geq 0$. On the other hand, if the business does not succeed, he does not receive any monetary payment. However, independently of how the business goes, every entrepreneur will receive a non-pecuniary payment ϕ that could be interpreted as the benefit of being "ones's one boss".

Notice that low human capital agents are not levied with the payroll tax. As in Rauch (1991), we assume that small firms operate formally while large firms operate

⁴Galiani and Weinschelbaum (2012)

formally. Also, as firm's size varies directly with the talent of its entrepreneurs, low-skilled firm owners will work informally. Unlike wage earners, only entrepreneurs with a high level of human capital work formally and pay an income tax.

Government The government collects payroll taxes from formal workers and provides a public nonpecuniary benefit ψ for all agents, both formal and informal. The benefit represents the services that can only be provided by the state and improve society's well being. This benefit has the same impact in the utility of all agents and the amount provided is $r\psi$, which depends increasingly on the amount of taxes collected. Let R_t be the sum of taxes collected by the government in period t :

$$r \equiv \frac{R_t}{P_t} \quad (2.7)$$

Occupational choice Each agent will have to choose whether to work as an employee or starting his own business, according to his endowment of managerial and human capital. Agent i 's expected utility of being an entrepreneur will be given by U_E^i and the utility of being an employee by U_S^i .

$$U_E^i = m^i \nu \left(\frac{B_t^i}{P_t} \right) + \phi + r\psi \quad (2.8)$$

$$U_S^i = \nu \left(\frac{W_t^i}{P_t} \right) + r\psi \quad (2.9)$$

3 Results

3.1 Non-inflationary environment

We start analyzing the agent's decision in a context where prices do not change over time, meaning that $P_t = P$ for all t . Under this condition, agent i will choose to run his own firm when he complies with the following condition:

$$m^i \nu \left(\frac{B^i}{P} \right) + \phi + r\psi > \nu \left(\frac{W^i}{P} \right) + r\psi \quad (3.1)$$

This decision will be different between low and high human capital agents since low human capital entrepreneurs are not levied with the payroll tax. Because of this difference, we will distinguish the decision between high and low human capital agents. Simplifying the previous expression and reordering terms we can arrive to the following expressions:

$$m^i > \frac{\nu(\omega^L(1 - \tau)) - \phi}{\nu(f(\omega^L))} \equiv m_1^L(\omega^L) \quad (3.2)$$

$$m^i > \frac{\nu(\omega^H(1 - \tau)) - \phi}{\nu(f(\omega^H)(1 - \tau))} \equiv m_1^H(\omega^H) \quad (3.3)$$

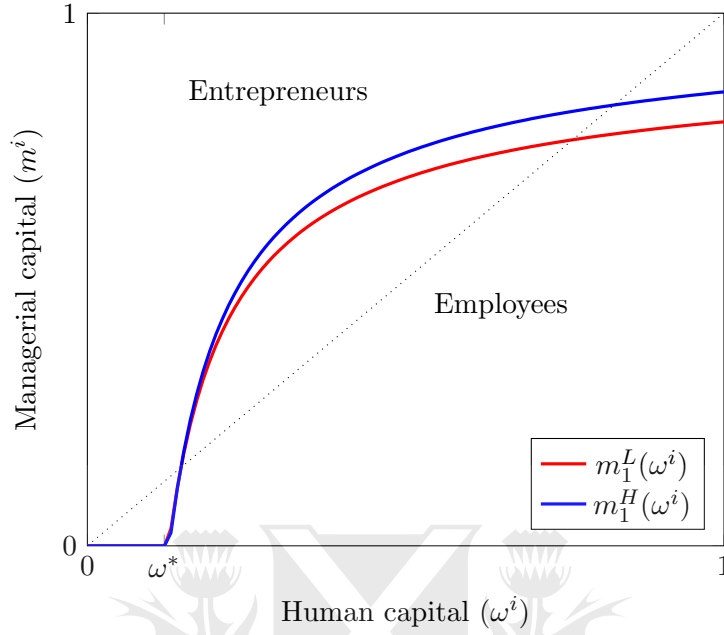
We define m_1^L and m_1^H as the minimum managerial capital needed by low and high-skilled agents (respectively) to prefer entrepreneurship rather than a job. These minimums depend on the particular values taken by ω^L and ω^H . Agents with a managerial capital m^i greater than $m_1(\omega^i)$ will choose to start their own firms, while agents with a managerial capital lower than this will prefer to be employed. Notice that there is a range of values of ω^i for which m_1^L and m_1^H are less than zero. This means that, independent of their level of managerial capital, for this range of ω^i agents would choose entrepreneurship. This range of values are those ω^i such that $\nu(\omega^i(1 - \tau)) \leq \phi$. Let ω^* be the maximum of this set of numbers:

$$\nu(\omega^*(1 - \tau)) = \phi \quad (3.4)$$

Figure 1 illustrates the agents' occupational decision, where each point of the graph represents a possible endowment of abilities. Both the red and the blue line shows all the possible combinations of managerial and human capital for which agents are indifferent between employment and entrepreneurship. The low human capital agents who receive a managerial endowment under the red line will prefer a job, while those with an endowment above the red line will become entrepreneurs. The same will happen with high human capital agents and the blue line. Notice that agents with a human capital lower than ω^* will always choose entrepreneurship.

Managerial capital can take any value from the vertical axis while the two possible values for human capital, ω^L and ω^H , are located at some point of the horizontal axis. In order to find both employees and entrepreneurs in this economy we need at least one

Figure 1: Occupational choice in a non-inflationary environment



of this two values to be located at the right side of ω^* . Therefore, it will be a necessary condition that:

$$\omega^H > \omega^* \quad (3.5)$$

3.2 Inflationary environment

Observe now how this dichotomy between employment and entrepreneurship changes when the economy is in an inflationary context. This means that prices will be different for each period and particularly we will assume that $\pi > 1$ and that $\pi = \frac{P_t}{P_{t-1}}$ for all t . Thus, inflation will reduce employees' purchasing power but will not affect entrepreneurs, leading to changes in the occupational choice. This effect will be stronger for low human capital agents, since their payment are delayed longer than high-skilled agents. With an inflationary environment, low human capital agents will choose entrepreneurship when is true that:

$$m^i \nu \left(\frac{f(\omega^L) P_t}{P_t} \right) + \phi + r\psi > \nu \left(\frac{\omega^L (1 - \tau) P_{t-\delta_i}}{P_t} \right) + r\psi \quad (3.6)$$

$$m^i \nu(f(\omega^L)) + \phi > \nu\left(\frac{\omega^L(1-\tau)}{\pi^\delta}\right) \quad (3.7)$$

$$m^i > \frac{\nu\left(\frac{\omega^L(1-\tau)}{\pi^\delta}\right) - \phi}{\nu(f(\omega^L))} \equiv m_\pi^L(\omega^L) \quad (3.8)$$

The condition for high human capital agents to prefer entrepreneurship is the following:

$$m^i > \frac{\nu\left(\frac{\omega^H(1-\tau)}{\pi}\right) - \phi}{\nu(f(\omega^H(1-\tau)))} \equiv m_\pi^H(\omega^H) \quad (3.9)$$

In this new context, we will name as $m_\pi^i(\omega^i)$ the functions that return the level of managerial capital that will leave agent i indifferent between both types of work. Notice that in an inflationary environment, compared to the non-inflationary, there is a wider range of values of ω^i for which agents will choose entrepreneurship regardless of their managerial capital. Also, there will be two critical values for ω^* , one for each level of human capital. In these cases, the maximum values for this ranges will be ω_π^{*L} and ω_π^{*H} :

$$\nu\left(\frac{\omega_\pi^{*L}(1-\tau)}{\pi^\delta}\right) = \phi \quad ; \quad \nu\left(\frac{\omega_\pi^{*H}(1-\tau)}{\pi}\right) = \phi \quad (3.10)$$

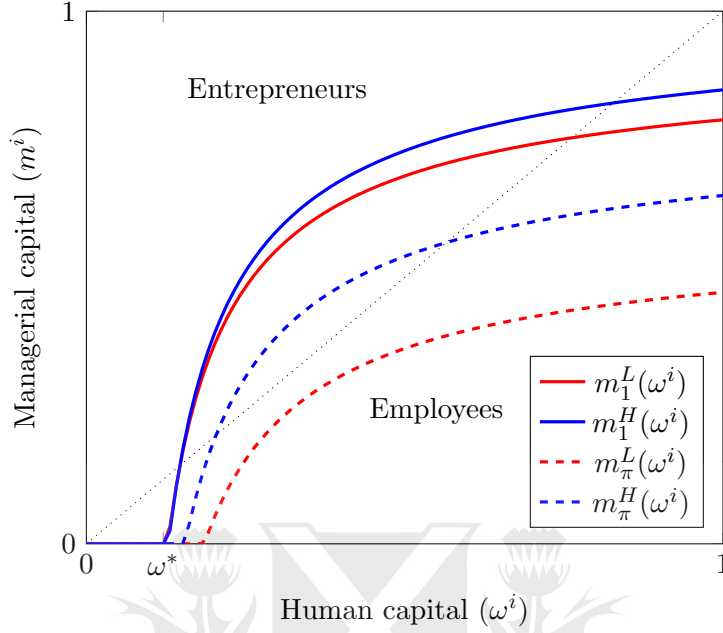
It is easy to notice that, whenever $\pi > 1$, is true that $\omega_\pi^{*L} > \omega_\pi^{*H} > \omega^*$. Whenever $\tau > 0$ and $\pi > 1$, it is also true that:

$$m_1^i(\omega^i) > m_\pi^i(\omega^i) \quad i = L, H \quad (3.11)$$

In presence of inflation there is a stronger incentive to leave the labor market to become an entrepreneur, and this incentive is greater as the level of inflation increases. This is due to the fact that entrepreneurs' real earnings are not affected by the lift in the price level, while employees' lose purchasing power because of the nominal rigidities of wages. Therefore, a range of individuals will now assume a risk that they did not face previously in a non-inflationary environment.

The differences in the decisions can be observed in figure 2, where the dashed lines represent $m_\pi^i(\omega^i)$. One can easily notice that for all ω^i there is a greater incentive to become an entrepreneur. It is also remarkable that the difference between the solid red line and the dashed red line is significantly greater than the difference between the

Figure 2: Occupational choice in an inflationary environment



blue lines. The incentive to become an entrepreneur is greater for low human capital agents since their salaries suffer a greater lag than high human capital nominal wages. A sustained increase in the price level will diminish their real earnings and force this agents into informal self-employment. Therefore, an inflationary environment will enhance entrepreneurship since real earnings will be reduced. Nonetheless, the incentives are stronger to self-employed agents that are not able to bring about neither innovation nor productivity improvements.

Besides, low-skilled entrepreneurs are assumed to work informally in the model. Increasing the quantity of this kind of entrepreneurs will reduce the amount of taxes collected, while the rise in high-skilled entrepreneurs does not have a clear effect on revenue.

$$\Delta r = \tau \int_{m_{\pi}^H}^{m_1^H} \left[m^i f(\omega^H) - \frac{\omega^H}{\pi} \right] g_H(m^i) dm^i - \tau \frac{\omega^L}{\pi \delta} \int_{m_{\pi}^L}^{m_1^L} g_L(m^i) dm^i \quad (3.12)$$

The changes in the provision of the public benefit will be given by $\Delta r \psi$. The first term of represent the changes in revenue caused by the migration of high-skilled

employees to entrepreneurship. Notice that this effect is ambiguous and it is not possible to know how this impact in social welfare. However, the migration of low human capital workers to entrepreneurship, represented by the last term of 3.12 is not ambiguous. Increasing the amount of low-skilled entrepreneurs has a clear negative effect in revenue and, therefore, as enhancing this type of entrepreneurs is not desirable for the economy.

4 Conclusion

It is clear that entrepreneurs are different between each other and that not every entrepreneur has a positive impact in the economy. Some entrepreneurs create their firms with the goal of developing a new product and creating new jobs, while others create their firms as a mean of subsistence. However, the policies developed to improve entrepreneurship seems to treat both types of firm owners as one.

The model developed in this work arrives to the conclusion that an inflationary context will increase the quantity of entrepreneurs in the economy. As wages are not actualized instantly, real earnings are diminished in presence of inflation. Firm owners, on the other hand, actualize their prices instantly and are not affected when prices increase. This incentive to entrepreneurship will be stronger for low-skilled agents, since their real earnings decrease more than proportionally to high-skilled employees' real earnings.

At the same time, enhancing firm creation between low human capital agents will have a negative impact in social welfare since this kind of firm owners tend to work informally. Increasing the number of these entrepreneurs means a lessening in revenue and a reduction of the benefits provided by the government.

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