Occupational choice and entrepreneurship: From necessity to opportunity

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Abstract

We present a simple agency model with an individual who faces an occupational choice between starting a self-managed business or entering the labor market as a wage worker. To set up the entrepreneurial activity, the individual needs external funding. We show that, when the reservation utility is low, the lender may not find it profitable to offer any contract and the individual is constrained to become a wage worker out of necessity. Whereas, when the reservation utility is high, the bank may be forced to give up part of the contract rent to induce the individual to become an entrepreneur out of opportunity.

1 Introduction

Entrepreneurship is the main driving force of economic growth in both developed and less developed countries (Valliere and Peterson, 2009). Understanding the motives behind the occupational choice of becoming an entrepreneur helps evaluate the

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contribution of entrepreneurship to economic growth, distribution of wealth, and income inequality, within and across countries (Naudé, 2010). But despite its relevance, there is still limited comprehension of which factors determine the birth of new businesses, especially for small enterprises.

Becoming an entrepreneur is an occupational choice made as an alternative to wage employment. In the Flash Eurobarometer survey conducted in 2012, over 42,000 respondents from European and non-European countries, 37 percent of the European respondents prefer to be self-employed. Among the non-European countries, Turkey and Brazil report the highest level of respondents who prefer self-employment to wage employment (respectively, 82% and 63%). However, starting a business from scratch is not always a viable choice. The majority of the European respondents perceive self-employed, in terms of entrepreneurship, as an unfeasible alternative (67%), with 21 percent stating that the lack of enough financial resources represents the main constraint.

Based on the motivations surrounding the start-up decision, the Global Entrepreneurship Monitoring (GEM) program distinguishes between necessity and opportunity entrepreneurs (Reynolds et al., 2005). Necessity entrepreneurs are individuals with a low outside option, pushed to entrepreneurship to start an income-generating activity when other employment alternatives are missing. In contrast, opportunity entrepreneurs are individuals with a relatively high reservation utility, pulled to entrepreneurship to pursue advantageous business ventures. A low outside option can be interpreted as an indicator of limited job alternatives due to economic downturns or, more generally, to inequality of opportunities, such as access to education, related to family background, race, and poverty (Roemer, 1998). But it can also be a reflection of glass ceilings in developed countries, that is, invisible barriers that deter female employment or empowerment. In such circumstances, setting up a business may also be associated with non-monetary rewards, such as personal fulfillment and autonomy.

According to the Flash Eurobarometer survey, necessity entrepreneurs were mainly unemployed people with a low education level (they drop out of school at less than age 15). In contrast, before starting the activity, opportunity entrepreneurs were employed individuals with a high education level (they finished school at more than

age 20). The majority of the European respondents to the survey claimed that their enterprises were pulled by opportunity (49%), with the highest share in Denmark, the Netherlands, Finland, and Luxembourg (above 60%); whereas, a lower share claimed that their enterprises were driven by necessity (29%), with the highest share in Romania, Estonia, and Greece (above 40%). Among the extra-European countries, the highest percentage of opportunity entrepreneurs are reported in China and Israel (above 50%) whereas, India and South Korea recorded the highest share of necessity entrepreneurs (above 60%). However, the distinction between opportunity and necessity entrepreneurs is blurry. Williams (2007) and Williams and Williams (2014) assert that the opportunity versus necessity dichotomy is a simplistic way to categorize entrepreneurship, not only because motives change over time but also because the two conditions may coexist. So, entrepreneurship requires a more detailed and realistic description that considers both the motives and the objective conditions behind new businesses creation.

This paper aims to provide a different interpretation of this necessity and opportunity dichotomy. We show that depending on both the reservation utility and the loan profitability of the bank, individuals may or may not have the possibility to choose the occupation that makes them better off. We present a simple model in which an individual faces an occupational choice between starting an owner-managed business and entering the labor market as a wage worker. The individual is endowed with a project requiring a fixed investment and some level of effort, and has some initial wealth, which cannot be invested into the project but can be used as collateral. Credit is provided by a single lender/bank, which aims to extract the highest possible surplus from the entrepreneurial project. The credit contract entails a principal-agent problem, as the probability of project success depends on the effort level, unobservable to the bank.

The reservation utility consists of the sum of the initial wealth and the opportunity cost of becoming a wage worker. Our two main results are: *i*) if the reservation utility is low, the individual earns a higher profit from the entrepreneurial project so that he would be worse off in the labor market as a worker. But, if the expected output from the project and the initial wealth fall short the costs of lending, the bank will be unwilling to lend, and the individual forced to become a worker; *ii*) if the

reservation utility is high, the individual is indifferent between the two employment alternatives, but the bank may not find it profitable to offer a credit contract. If the opportunity cost is higher than a given threshold, the individual will strictly prefer to be a wage worker. But, if the project's expected output is sufficiently high, the bank will be willing to reduce the repayment and, thus, give up part of its monopolistic rent to encourage the entrepreneurial activity.

Therefore, when the prospects in the labor market are poor, the individual would prefer to set up a business out of necessity but, the presence of credit constraints may preclude the optimal occupational choice. We interpret the concept of necessity as a circumstance with limited employment alternatives, where the individual is made worse off because the chance to choose the best occupation is missing. According to our results, in necessity conditions, the individual would be better off by running a business but, unless the initial wealth is sufficiently high, is credit constrained and forced to work for a wage. In contrast, in opportunity conditions, the individual can choose indifferently, regardless of the level of the initial endowment. And, even in the case in which the bank may deny credit, the individual is equally better off by working for a wage. In opportunity conditions, borrowing constraints may be binding because the expected return by the bank is decreasing in the individual's reservation payoff. Indeed, if the reservation payoff is high, the individual has more options in the labor market, and it would be too costly for the bank to provide the loan. If the reservation payoff is higher than a certain threshold, the individual may prefer to be a subordinate worker even when offered advantageous financial terms in the credit market. This result is in line with Iyigun and Owen (1998), who observe that, during economic expansions, individuals may prefer to work for a safe wage rather than setting up a risky entrepreneurial activity.[1] Our results are also in line with Blanchflower et al. (2001), who, in the attempt to estimate the magnitude of latent entrepreneurship across countries, find evidence that liquidity constraints are the main obstacle that hinders potential entrepreneurs from running their businesses.

In the second part of the paper, we briefly analyze some policy interventions to advocate entrepreneurship in necessity conditions. However, the desirability of

[1] Ahunov and Yusupov (2017) show that risk-tolerant individuals are more likely to become self-employed than workers.

a policy depends on the social efficiency of the entrepreneurial project. When the project's expected output is higher than the resources employed, the equilibrium in which borrowing constraints prevent the individual from making the optimal occupational choice is inefficient. We will show that a policy intervention aimed to either reduce the lending costs or endow the individual with the wealth needed to borrow can restore efficiency. Whereas, when the business project is socially inefficient, a policy would never encourage the entrepreneurial activity, and thus a no-intervention would be preferable.

1.1 Related Literature

The necessity and opportunity dichotomy is at the basis of the motives that push and pull individuals towards business creation. According to the entrepreneurship literature, pull factors include the desire for independence, success, and the expectation of high financial returns (Carter et al., 2003; Clark and Drinkwater, 2000). As far as push factors are concerned, the most important are generally family commitment, risk of unemployment, and dissatisfaction with the current standard of living (Rotefoss and Kolvereid, 2005).

Our paper is related to the literature that investigates the relationship between economic development and entrepreneurship as an occupational choice.[2] In developing countries, Yamada (1996) finds evidence of countercyclical behavior in the rate of new owner-managed businesses. Carree et al. (2002) provide a cross-sectional analysis by using data from 23 OECD countries from 1976 to 1996. They show that the number of business activities declines as the economy grows, but it rises again in highly developed countries. Similarly, Wennekers et al. (2005), using data from the Global Entrepreneurship Monitor (GEM), confirm such a U-shaped relationship between the birth rate of new firms and the level of the per capita income. Economies of scale and better employment opportunities can explain the preference of being a wage-earner during expansions. By contrast, high levels of economic development can create an increasing demand for variety, which prompts the birth of new market opportunities (Jackson, 1984; Baker et al., 2005). Table 1 shows the relationship

[2]For the counter-cyclicality of cooperative firms see Monteleone and Reito (2018).

among per-capita GDP, the number of employees, and new owner-managed firms in Italy. The case of Italy is appealing because it consists of two radically different sub-economies: a developed north and a less-developed south. The data show the countercyclical trend of new small business activities. Specifically, high levels of GDP in the north are associated with a higher number of employees. Whereas, in the south, low values of GDP are related to higher levels of owner-managed firms.

Table 1. GDP, employees and new individual firms in Italy.

	GDP per capita (EUR)	Employees	Employees to total population (%)	Owner-managed firms	Owner-managed firms to total population (%)
North	34,487.9	7,167,884	25.8	1,378,903	5.0
Center	30,473.8	2,633,976	21.8	631,973	5.2
South & Islands	18,159.2	2,285,713	11.5	1,199,640	6.0
Italy	83,120.9	12,087,573	59.0	3,210,516	16.0

Source: Eurostat, Istat, Unioncamere.
Employees refers to the number of workers aged between 15-64 years old in active enterprises. Owner-managed firms refer to individual enterprise where the owner is natural person.

Throughout the model, we assume the presence of a single monopolistic lender. This assumption is made to represent rural credit markets where small entrepreneurs rely on informal lenders, such as money lenders or microfinance institutions, with considerable market power. Especially in developing countries, poor individuals have little access to the formal banking sector and often turn to informal lenders, which, thanks to their ability to obtain superior information on local borrowers' reliability, charge individuals with very high or prohibitive interest rates (Hossein, 2013; Kar and Swain, 2014; Mookherjee and Motta, 2016). The assumption of monopolistic lender is in line with the argument of Besley (1994) and supported empirically by the analysis of Beck et al. (2004) and Delis et al. (2017). By using a cross-country analysis, Beck et al. (2004) show that high bank concentrations obstacle access to credit to small firms.[3] Delis et al. (2017) analyze US data and show that firms with poor investment returns are more likely to get credit from monopolistic banks. Other theoretical and empirical works claim that microfinance institutions are shifting from non-profit

[3]The authors also posit that the presence of government bank ownership tightens borrowing restrictions.

to for-profit status, a process known as mission drift (Cull et al., 2007; Mersland and Strøm, 2010; Serrano-Cinca and Gutiérrez-Nieto, 2014). Roberts (2013) reports empirical evidence that the for-profit status has led to an increase of about 4 percent of effective interest rates charged by microfinance lenders. The global average interest rate is about 35 percent, but it is possible to observe microcredit interest rates even above 80 percent. Table 2 reports some examples. Argentina has one of the highest interest rate (67%), although the bank concentration is relatively low (41%). Whereas, other countries, like Gambia or Malawi, have lower interest rates (28% and 25%), although an extremely high bank concentration.[4]

Table 2. Lending interest rate and banking system concentration

Country	Lending interest rate (%)	Bank concentration (%)
Argentina	67.3	41.4
Madagascar	49.0	74.8
Brazil	46.9	56.6
Gambia	28.0	100.0
Malawi	25.7	86.8
Uzbekistan	23.6	59.5
Tajikistan	23.6	95.8
Ukraine	19.8	39.2
Angola	19.3	58.3
Peru	16.8	72.7

Source: Bankscope, World Bank
The lending interest rates refer to the interest rates on bank credit to the private sector.
The bank concentration refers to the percent of bank assets held by top three banks.

Among the reasons that explain the spread between microcredit and standard bank interest rates, Banerjee (2013) reports the riskiness of clients and small-sized loans. In terms of our paper, this means that money lenders and microcredit banks may take advantage of their monopoly position and deny credit to low-wealth-low-

[4]Data also show that it is possible to observe countries with high bank concentration (Switzerland 71.52%, Hungary 58.89%) associated with low interest rates (Switzerland 2.63%, Hungary 1.79%).

return individuals.[5] Even in developed countries, it is not uncommon to observe very high interest rates. For instance, in Table 3, we report the spread between borrowing and lending interest rates in Italy and show that, in the less-developed regions of the south, it is about 20% higher than in the north. However, even if less developed regions strongly rely on debt finance, this does not necessarily imply that they are poor in terms of wealth. Table 3 also reports the territorial disparities in terms of loan-deposit ratio in Italy. In the south, the low value of ratio indicates that not all deposits translate into local investments. In the north, local investment exceeds the amount of local liquid assets, and this may mean that these regions borrow from the south or abroad.

Table 3. Loan-deposit ratio and interest rate spread in Italy

	Loans	Deposit	Loan/Deposit Ratio	Interest Rate Spread
North	542,975	650,186	1.2	2.2
Center	215,448	286,338	1.3	2.0
South & Island	255,039	197,971	0.8	2.7
Italy	1,134,494	1,013,463	1.1	2.2

Source: Bank of Italy.

Our paper also contributes to the literature that analyzes the role of liquidity constraints on new businesses creation. Myers (1977), Stiglitz and Weiss (1981) and Beck and Demirgüç-Kunt (2006) identify the difficulty to raise external capital as the main obstacle to the birth of new businesses, especially for poor individuals (Ghatak and Jiang, 2002). The inability to borrow may stem from market imperfections, such as informational asymmetries, which restrict credit for potential entrepreneurs, with the consequence that, in equilibrium, the volume of lending is inefficient (Stiglitz and Weiss, 1981; Minelli and Modica, 2009). Our results are close to those in Banerjee and Newman (1993), who argue that, during economic downturns, capital market frictions hinder access to credit for poor people, who thus are forced to become workers

[5]For other theoretical papers with profit-motivated microfinance institutions, see Guha and Chowdhury (2013), and Caserta et al. (2018).

or remain unemployed. So, wage contracts may act as substitutes for entrepreneurial activities when individuals cannot borrow.[6]

Credit constraints may be softened in the presence of some initial wealth to be invested in the activity. Many works analyze the relationship between an individual's initial wealth and business entry. Evans and Jovanovic (1989) show that, when credit constraints bind, wealthier people are more likely to become entrepreneurs than less wealthy individuals, who often set up small business activities with suboptimal amounts of capital.[7] Similarly, Holtz-Eakin et al. (1994) posit that entrepreneurs who have personal resources, such as an inheritance, are more likely to survive in the market and earn higher returns (Evans and Leighton, 1989). Thus, credit constraints are critical to the creation and survival of new businesses. Our result is close to that in Ghatak and Jiang (2002), in which the individual's occupation depends on the endowment level. Unlike his work, in our model, the individual's wealth cannot be invested in the entrepreneurial project but can be used as collateral in the financial contract. If the initial wealth is high enough, the bank will find it profitable to offer the credit contract. Otherwise, the individual will have no choice but to work for a wage.

As for the policy implications, we follow the literature on the effects of public interventions in credit markets under imperfect information (Mankiw, 1986; Innes, 1991). Our policy setup is, in part, close to the moral-hazard section of Minelli and Modica (2009), in which they analyze a series of public interventions in a monopolistic credit market. They discuss the effects of two of the most widely used policy instruments, the interest-rate subsidy and the investment subsidy, and show that the former is optimal, as it maximizes net benefits for the government.[8]

[6]Limited financial resources also explain why necessity entrepreneurs are more likely to compete by pursuing a cost leadership strategy (Dencker et al., 2009).

[7]The author also claims that small businesses grow faster than larger firms because of the tendency of small entrepreneurs to reinvest the returns on capital into their activity.

[8]They also argue that providing collateral directly to borrowers, before the contract is signed, is sub-optimal. In addition, they propose an innovative policy, "money in a savings account", in which the government directly provides the necessary collateral either to firms or banks depending on whether projects succeed or fail. They show that this policy has the same expected cost of the interest-rate subsidy.

The rest of the paper is as follows. Section 2 introduces the model. Section 3 characterizes the equilibrium. Section 4 draws policy implications. Section 5 presents a brief discussion. Section 6 concludes.

2 The Setup

Consider a one-period, risk-neutral economy where an individual faces an occupational choice between paid employment and entrepreneurship. The individual has an initial (illiquid) wealth, W, and an exogenous reservation wage, ω, which can be interpreted as the employment options available in the labor market. Hence, as a wage worker, the individual has an outside option yielding utility $W + \omega \equiv u_R$. As a would-be entrepreneur, the individual is endowed with a project that requires a fixed investment, I, and yields a stochastic output, Y in case of success, and 0 in case of failure, with probabilities specified below. The initial wealth W cannot be invested in the project, but can be used as collateral in a financial contract. Thus, to undertake the entrepreneurial activity, the individual needs external credit, which can be provided by a single monopolistic bank. We restrict attention to a debt contract[9], which specifies the loan advanced, I, and the couple (R, S), where R is the amount the entrepreneur has to pay back in case of success, and S is the security (collateral) transferred to the bank in case of failure. The probability of project success depends on the effort, high or low, that the entrepreneur chooses to exert. With high effort, the project succeeds with probability p_H, whereas with low effort, with probability p_L, with $p_H - p_L = \Delta p > 0$. Low effort entails no cost to be implemented, whereas high effort requires a cost of e.

We assume that

$$Y > W + \tfrac{e}{\Delta p}. \tag{1}$$

This assumption implies that the maximum profit the bank can extract from the project, when high effort is exerted, is higher than that with low effort. However, the bank cannot observe the effort provided by the agent, and this implies a hidden

[9]In the Remark below, we show that the theoretical conclusions would not change with equity financing.

action problem.[10] From Equation (1), it follows that, if a financial contract is offered, it will always promote the high-effort strategy.

Throughout the paper, we also assume limited liability and a risk-free rate normalized to 0.

3 Equilibrium

If a debt contract is signed, the individual's expected utility is

$$u(R, S) = W + p_H(Y - R) - (1 - p_H)S - e. \tag{2}$$

The agent accepts the contract if the project's expected payoff satisfies the participation constraint, that is

$$u(R, S) \geq u_R. \tag{PC}$$

If we had full information, the effort would be observable by the bank, and the individual would choose the high-effort strategy. The full-information contract is any linear combination of R and S that satisfies (PC). For instance, the pair (R^{FI}, S^{FI}), with $R^{FI} = Y + W - (e + u_R)/p_H$ and $S^{FI} = W$. Under full information, the lender would extract all the rent from the entrepreneurial project, and the individual would obtain just the outside payoff, u_R. This means that the individual would be equally better off in the two employment alternatives, and the bank's expected profit would be

$$\pi(R^{FI}, S^{FI}) = p_H Y - e - \omega - I, \tag{3}$$

which, as we will see in subsection 3.2, is positive for $\omega < p_H Y - e - I$.

If information is asymmetric, the lender designs the financial contract to maximize the expected profit. From (1), if low effort is exerted, the bank would obtain a profit lower than with high effort. So, the bank will set R such that it is in the interest of the borrower to pursue the high-effort strategy, and maximize

$$\pi(R, S) = p_H R + (1 - p_H)S - I. \tag{4}$$

[10] We exclude monitoring activity by the bank.

The agent chooses high effort if the incentive compatibility constraint,

$$p_H(Y-R)-(1-p_H)S-e \geq p_L(Y-R)-(1-p_L)S, \qquad (IC)$$

is satisfied, that is

$$R \leq Y+S-\tfrac{e}{\Delta p} \equiv R^*,$$

where $e/\Delta p$ is the information rent the bank must give up to induce the "right" level of effort.

Since the bank's profit in (4) is increasing in both R and S, the bank will set the repayment and the collateral at the highest possible level, satisfying both (PC) and (IC). To promote the high-effort strategy, the lender will set $R = R^*$, which implies that the incentive constraint is binding. As for the collateral, it will be set by taking into account the repayment R^*, and the constraint $S \leq W$. The equilibrium collateral will be $S = \min\{W, S_{PC}\}$, where S_{PC} is obtained from the agent's participation constraint evaluated at R^*, that is

$$S = \bar{u} - \omega \equiv S_{PC},$$

with $\bar{u} = p_L e/\Delta p$. As we will show below, the value $\bar{u}$ is the project's expected payoff when the equilibrium collateral is W.

Under the contract $(R^*, \min\{W, S_{PC}\})$, the individual's expected payoff is

$$u(R^*, S) = W + \bar{u} - \min\{W, S_{PC}\}, \qquad (5)$$

and, the bank's expected profit,

$$\pi(R^*, S) = p_H Y + \min\{W, S_{PC}\} - I - \tfrac{p_H e}{\Delta p}, \qquad (6)$$

where I and $p_H e/\Delta p$ are, respectively, the loan cost and the expected information rent. For the sake of the exposition, we define the total lending costs as

$$I + \tfrac{p_H e}{\Delta p} \equiv C.$$

It is interesting to note that, (5) and (6) imply that the amount specified in the $\min\{W, S_{PC}\}$ is transferred to the lender regardless of whether the project succeeds or fails.[11]

[11]This result is similar to Minelli and Modica (2009). In their model, the individual has a reservation utility equal to zero, so that the bank must give up a lower fraction of its profit to induce the agent to participate.

The equilibrium collateral will depend on the values of u_R, that is

$$u_R = \bar{u} \implies W = \bar{u} - \omega \implies W = S_{PC}. \tag{7}$$

To derive the equilibrium contract, if any, we will distinguish two subcases. The first subcase refers to a condition of *necessity*, in which $u_R < \bar{u}$, and thus $W < S_{PC}$. The second subcase refers to a condition of *opportunity*, in which $u_R \geq \bar{u}$, and thus $W \geq S_{PC}$.

Note that, since u_R and $\bar{u}$ both depend on exogenous variables, the two subcases are not endogenously determined. As we will show, the possibility to choose the optimal employment alternative will depend on the loan profitability of the bank. Specifically, in necessity conditions, the willingness of the bank to offer a credit contract will depend on the value of the individual's initial wealth, W, whereas, in opportunity conditions, it will depend on the value of the reservation wage, ω.

3.1 Choice by necessity

If $u_R < \bar{u}$, then $W < S_{PC}$, and the equilibrium contract is (R^*, W). From (5), the agent's expected utility is

$$u(R^*, W) = \bar{u}. \tag{8}$$

Since $u_R < \bar{u}$, it follows that the entrepreneurial project yields a payoff higher than the reservation utility. So, when the job alternatives in the labor market are poor, the individual will find it more profitable to become an entrepreneur out of necessity. Note that, in this case, the individual would obtain a payoff higher than under the full-information contract.

As for the bank's profitability, under the contract (R^*, W), the bank's expected profit in (6) can be rewritten as

$$\pi(R^*, W) = p_H Y + W - C, \tag{9}$$

which is positive if

$$p_H Y + W \geq C. \tag{10}$$

The inequality in (10) implies that the bank will be willing to lend if $W \geq C - p_H Y$. The individual's initial wealth must be at least sufficient to compensate

the bank when the expected project's return falls short of the lending costs. This represents the minimum amount of wealth needed to borrow. The assumption in (1) does not exclude that the expected output from the project can be lower than the sum of the expected information rent and the loan cost. If $p_H Y < C$, then the credit contract is offered, provided the condition in (10) holds. But, if $W < C - p_H Y$, then $\pi(R^*, W) < 0$, so the bank will be unwilling to lend, and the agent forced to become a wage worker due to the lack of other viable alternatives. In this case, credit constraints make the individual worse off as they result in a sub-optimal occupational choice. If $C - p_H Y \leq W < S_{PC}$, then the bank's profit in (9) is positive, and the individual will have the opportunity to start an owner-managed firm. Hence, in conditions of necessity, when the alternatives on the labor market are limited, and the entrepreneurial project is poor, an initial wealth relatively high gives the individual the chance to choose the optimal occupation. Whereas, if $p_H Y \geq C$, that is, if the project's expected output is higher than the costs of lending, then the bank will find it profitable to offer the contract, regardless of the individual's endowment.

Lemma 1. *In equilibrium, if $p_H Y \geq C$ a credit contract will be offered, whereas, if $p_H Y < C$, the bank may prefer to deny credit and offer no contract.*

From the results of this subsection, we can state the following.

Proposition 1. *If $u_R < \bar{u}$, the equilibrium contract is (R^*, W). The individual prefers setting up an owner-managed firm rather than entering the labor market as a worker. But, if $p_H Y + W < C$, the bank will not find it profitable to finance the entrepreneurial project, and the agent is forced to become a worker out of necessity.*

As mentioned earlier, a low outside option represents high unemployment, low education levels, and poverty, mainly present in rural areas. But it can also be the mirror of employment discrimination across gender and race, even in more developed regions. In such contexts, entrepreneurship can represent a way to escape poverty and gain personal fulfillment and autonomy. However, liquidity constraints may hinder the viability of the entrepreneurial project and force individuals to be wage workers out of necessity. Biding financial constraints are the byproduct of wealth inequality that only wealthier people can overcome. Indeed, the presence of a sufficient initial

endowment that can be pledged against default can relax credit restrictions, but this may require secure property rights not always feasible in developing areas (Besley and Ghatak, 2008). As we will show, whether entrepreneurship should be encouraged by policy interventions will depend on the efficiency of the project.

Figure 1*a* shows the equilibrium payoffs when $p_H Y < C$. For $W < C - p_H Y$, the bank's profit is negative, and the agent obtains the reservation payoff, u_R, albeit it is lower than the payoff from the entrepreneurial project (dashed line), which is not attainable. When $C - p_H Y \leq W < S_{PC}$, the bank's profit is positive and increasing in W, and the agent chooses to set up the business, obtaining the higher utility level, $\bar{u}$. Figure 1*b* shows the equilibrium payoffs when $p_H Y \geq C$. Credit constraints are not binding, and the individual chooses to become an entrepreneur. In the next subsection, the case in which $W \geq S_{PC}$ will be analyzed.

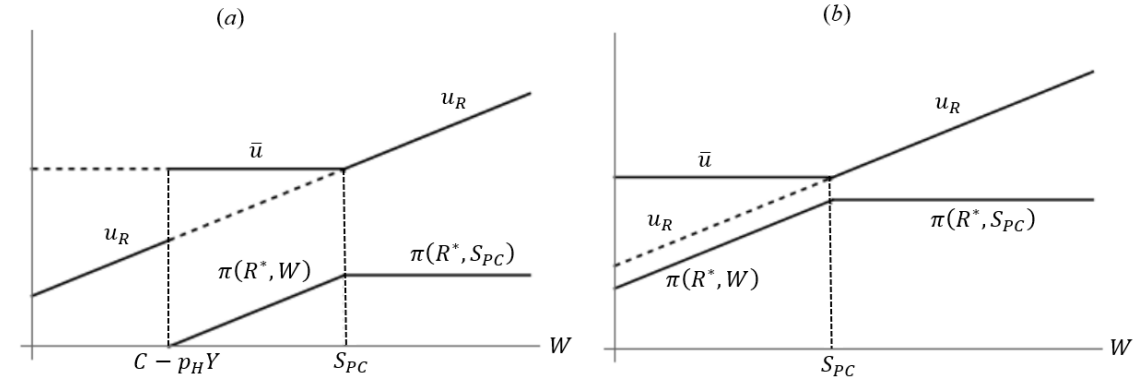

Figure 1: Equilibrium payoffs:
a) $p_H Y < C$. Parameters: $Y = 2$, $p_L = 0.4$, $p_H = 0.7$, $e = 0.7$, $I = 0.5$, $\omega = 0.2$;
b) $p_H Y \geq C$. Parameters: $Y = 4$, $p_L = 0.4$, $p_H = 0.7$, $e = 0.7$, $I = 0.5$, $\omega = 0.2$.

3.2 Choice by opportunity

If $u_R \geq \bar{u}$, then $W \geq S_{PC}$. The optimal contract is (R^*, S_{PC}) and the individual's expected utility from the project is

$$u(R^*, S_{PC}) = u_R, \tag{11}$$

which implies that the entrepreneurial activity yields a payoff equal to the reservation utility. Thus, when the initial endowment is relatively high, the agent will find it equally profitable to become an entrepreneur or a worker. In this case, the equilibrium collateral enables the lender to extract all the rent from the entrepreneurial project.

Under the equilibrium contract (R^*, S_{PC}), the bank's expected profit is

$$\pi(R^*, S_{PC}) = p_H Y - e - \omega - I, \tag{12}$$

equal to the full-information profit in (3).

As shown in Figure 1*a* and 1*b*, when $W \geq S_{PC}$, the individual obtains the reservation payoff, and the bank obtains a higher profit, which does not depend on the amount of the individual's endowment. However, the function in (12) is decreasing in the reservation wage, ω. The higher the employment opportunities on the labor market, the higher the fraction of the rent that the bank must lose to induce the agent to accept the contract. A high reservation wage weakens the monopoly power of the lender and strengthens the bargaining power of the potential entrepreneur. However, as mentioned before, here we focus on small entrepreneurs, who have limited access to competitive banking sectors, and rely on informal lenders with considerable market power. The bank's expected profit in (12) is positive if

$$\omega < p_H Y - e - I \equiv \tilde{\omega}.$$

If $\omega > \tilde{\omega}$, then $\pi(R^*, S_{PC}) < 0$ and the bank will not offer any loan contract. In this case, the bank should provide a level of utility to the individual at least equal to ω. If the reservation wage is relatively high, offering the loan contract would be too costly for the bank, which thus prefers to deny credit. In the condition of opportunity, borrowing constraints do not make the individual worse off. Indeed, becoming an entrepreneur as well as working for a wage makes the agent equally better off.

From the results of this subsection, we can state the following.

Proposition 2. *If $u_R \geq \bar{u}$, the equilibrium contract is(R^*, S_{PC}). The individual is indifferent between setting up a firm and entering the labor market as a worker.*

But, if $\omega > \tilde{\omega}$, the bank will not find it profitable to finance the entrepreneurial project, and the agent will become a worker.

It is interesting to note that if $\omega \geq \bar{u}$, then S_{PC} is equal or lower than zero. Since the security cannot be negative, the bank will set $S = 0$. In this case, under the contract $(R^*, 0)$, the individual's payoff from the entrepreneurial project is

$$u(R^*, 0) = W + \bar{u} < u_R. \tag{13}$$

The availability of many outside employment opportunities makes the project less attractive. In this case, the individual prefers to be a wage worker and, for the contract $(R^*, 0)$ there will not be a loan demand. If $p_H Y > C$, by Lemma 1, the lender would make a positive expected profit, $\pi(R^*, 0) > 0$. Thus, to attract the potential entrepreneur, the bank will be willing to lower the equilibrium repayment and set it such that the agent is equally better off between starting a firm and working for a wage, that is

$$R(\omega) = Y - \tfrac{e+\omega}{p_H} \equiv R_{PC}.$$

At this new equilibrium repayment, the individual's participation constraint is binding, and the incentive constraint is slack. Under the contract $(R_{PC}, 0)$, the bank will make the profit in (12), and again, the agent will be indifferent between the two occupational options. Therefore, if $\omega \geq \bar{u}$, although the equilibrium payoffs do not change, the contracts through which those payoffs are achieved are different.

Proposition 3. *If $p_H Y < C$, then $\tilde{\omega} < \bar{u}$ and the equilibrium contract is (R^*, S_{PC}). If $p_H Y \geq C$, then $\tilde{\omega} \geq \bar{u}$ and the equilibrium contract is $(R_{PC}, 0)$.*

This result implies that in conditions of opportunity, a project with a high expected return enables the potential entrepreneur to get the bank to decrease the equilibrium repayment, in spite of its monopolistic power.

Figure 2 below shows the plot of the bank's profit to ω. The cases where $\omega < \bar{u} - W$ refer to the condition of necessity examined in subsection 3.1, where the equilibrium contract is (R^*, W) and the profit of the lender does not depend on ω. When $\omega \geq \bar{u} - W$, the bank's profit declines as ω increases. From Proposition 2, if

$\omega \geq \tilde{\omega}$, the bank is unwilling to lend, and no equilibrium exists. So, to determine whether an equilibrium under the contract $(R_{PC}, 0)$ is feasible, we need to check if $\tilde{\omega} \geq \bar{u}$. It is possible to note that, depending on the value of $p_H Y$, the threshold $\tilde{\omega}$ can be greater or lower than $\bar{u}$. Indeed, if the project expected output is lower than the costs of lending, that is $p_H Y < C$, then $\tilde{\omega} < \bar{u}$, so that the binding threshold will be $\tilde{\omega}$ and the equilibrium contract will be (R^*, S_{PC}), as depicted in Figure 2*a*. Whereas, if $p_H Y \geq C$, then $\tilde{\omega} \geq \bar{u}$, and the equilibrium with $(R_{PC}, 0)$ will be feasible, as in Figure 2*b*.

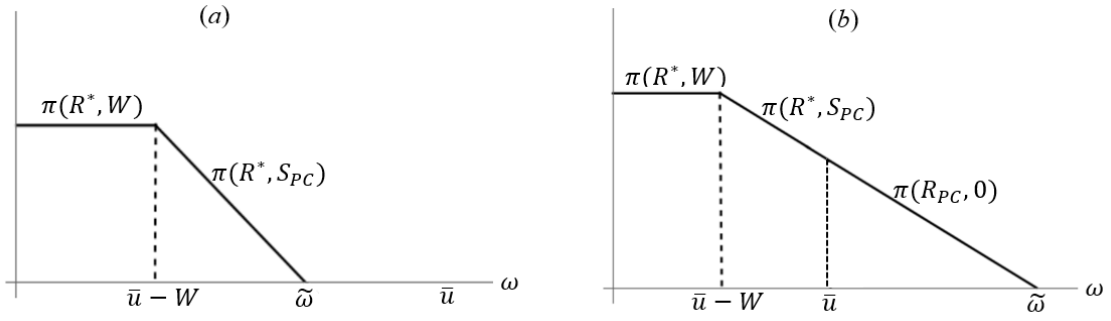

Figure 2: Bank's profit:
a) $p_H Y < C$. Parameters: $Y = 2$, $p_L = 0.4$, $p_H = 0.7$, $e = 0.7$, $I = 0.5$, $W = 0.8$;
b) $p_H Y \geq C$. Parameters: $Y = 4$, $p_L = 0.4$, $p_H = 0.7$, $e = 0.7$, $I = 0.5$, $W = 0.8$.

Remark In the paper we restrict attention to the case in which external funds are raised through a debt contract. This is quite so for small business, whose expected returns are generally low. If the return of the entrepreneurial project is observable, the bank can participate to a fraction of it by financing the indivdual through a combination of debt and equity finance. We would obtain the same result of the Section 3, even in the absence of collateral. Let $W = 0$ and (α, R) be the debt/equity contract, where α is the share of the investment I financed with debt, whereas $(1-\alpha)$ is the share of I financed with equity. The payoff would be $u(\alpha, R) = \alpha p_H (Y - R) - e$ for the individual, and $\pi(\alpha, R) = p_H[(1-\alpha)(Y-R) + R] - I$ for the bank. The individual's incentive constraint, $\alpha p_H (Y - R) - e \geq \alpha p_L (Y - R)$, would be satisfied for $R = Y - e/\alpha \Delta p$, which is equal to R^* for $\alpha = 1$ and $S = 0$. For this equilibrium repayment, the individual obtains $u(\alpha, R) = \bar{u}$, which is equal to the payoff derived in

the subsection 3.1. Then, Proposition 1 also applies to the case with an equity/debt contract.

4 Policy

In the choice by necessity, borrowing constraints prevent the individual from choosing the profitable occupation. In this section, we focus on the case in which $u_R < \bar{u}$ and discuss some policy implications. As mention earlier, if enough initial wealth is available, the project is financed, and the individual is better off by choosing to be an entrepreneur. However, efficiency requires that the expected output from the investment must be at least equal to the resources used for the investment.

If the condition in (10) is satisfied, that is $p_H Y + W \geq C$, the lender is willing to fund the project. This inequality implies that the expected output from the project can be either higher or lower than the resources used, that is $I + e$. Depending on the value of $p_H Y$, we can distinguish two cases: $p_H Y < I + e$; $p_H Y > I + e$. In the first, the project is socially inefficient but, from the result in subsection (3.1), if the individual has enough endowment, the bank will find it profitable to finance the project, and the equilibrium will be inefficient. From a social perspective, it would be preferable to discourage investment with an interest or income tax, or a subsidy to the inactivity, as in de Meza and Webb (1987). Whereas, if the initial wealth is not sufficiently high, the bank is unwilling to lend, and the individual forced to become a wage worker out of necessity. In contrast to other models of business lending, in this case it would be socially optimal to prevent the individual from implementing the project, as this would result in a waste of resources. Therefore, the desirable scenario is a no-intervention policy.

When $p_H Y > I + e$ but $W < C - p_H Y$, the project is socially efficient, but credit constraints preclude the individual from setting up the business. Policy interventions aimed at encouraging the investment would be beneficial. We analyze below the effects of introducing either an interest-rate or investment subsidy, or a transfer to the entrepreneur that can be used as collateral in the credit contract. We then show that the policy cost does not depend on the instrument chosen to implement the intervention.

With the interest-rate subsidy, the incentive-compatible repayment, R^*, increases up to the level such that the bank makes the same profit as in the inefficient equilibrium, where the project is not financed, that is

$$\pi(R^*(1+\phi), W) = p_H R^*(1+\phi) + (1-p_H)W - I = 0,$$

with

$$\phi = \frac{p_H c - \Delta p(p_H Y + W - I)}{p_H[\Delta p(Y+W) - c]}. \tag{14}$$

Since the interest-rate subsidy is only provided if the project succeeds and is proportional to the repayment R^*, the expected cost of this policy is $p_H \phi R^* = C - p_H Y - W$.

With an investment subsidy, the loan investment provided by the bank is reduced by $\phi \in (0,1)$. The loan cost for the bank is thus $(1-\phi)I$. The subsidy is such that

$$\pi(R^*, W) = p_H R^* + (1-p_H)W - (1-\phi)I = 0,$$

that is

$$\phi = \frac{C - p_H Y - W}{I}, \tag{15}$$

and the policy cost is $\phi L = C - p_H Y - W$, as in the interest-rate subsidy.

As for the transfer to the entrepreneur, in this case the policy aims to provide the potential entrepreneur with the wealth needed to get the loan. Thus, the optimal size is

$$\hat{S} = C - p_H Y - W. \tag{16}$$

In equilibrium, the contract $(R^* + \hat{S}, W + \hat{S})$ is such that the bank will make nonnegative profits, and the individual start the business. The cost of the policy is $\hat{S} = C - p_H Y - W$, as in the interest-rate and investment subsidies.

After the policy intervention, the individual can choose to become an entrepreneur and get the project payoff, $p_L e/\Delta p$. By comparing the policy gain with the cost, the net benefit from the intervention is $p_H Y + W - I - e$, which is positive since social efficiency requires that $p_H Y > I + e$.

Proposition 4. *In the choice by necessity, if $p_H Y > I + e$, the project is socially efficient, but if $W < C - p_H Y$, the bank denies credit and the equilibrium is inefficient.*

A policy intervention on the costs of lending or on the individual's wealth would restore efficiency. If $p_H Y < I + e$, the project is socially inefficient, and it would be optimal to not finance the project.

But for the cases in which the project is inefficient, a policy intervention that reduces the costs of lending to the bank or provides the wealth needed to collateralize the loan can make the individual better off, becoming a necessity entrepreneur.

5 Discussion

In this section, we relax some assumptions made in the model and discuss the implications. We analyze the effects on the occupational choice of wealth investment, competitive banking sector, and individual risk aversion.

5.1 Wealth investment

In many pieces of research, would-be entrepreneurs can invest their initial wealth into the business activity, thereby lowering the loan cost. Here, we demonstrate how wealth is irrelevant to the equilibrium occupational choice.

We adopt the same set-up as before, but now we assume that the individual's initial wealth is liquid and can be invested in the entrepreneurial activity. However, the endowment is lower than I, and the individual needs outside financing to start the business. Funds are provided by the monopolistic lender, which now offers a contract specifying only the repayment to pay back in case of success and the loan advanced, $I - W$. Since W is invested in the business activity, the bank cannot use it as collateral to pledge against default. Thus, the bank's expected profit is $\pi(R) = p_H R + W - I$, whereas the individual's participation and incentive constraints are $p_H(Y - R) - e \geq u_R$ and $p_H(Y - R) - e \geq p_L(Y - R)$.

If $u_R < \bar{u}$, then the incentive constraint is binding, and the participation constraint is slack. The incentive-compatible repayment thus requires $R \leq Y - \frac{e}{\Delta p} \equiv R_{IC}^W$, which is equal to R^* when $S = 0$. Since the bank's profit is increasing in R, the bank will set the repayment at the highest possible level, that is $R = R_{IC}^W$. The individual's expected utility from the project is $u(R_{IC}^W) = \bar{u}$. Since $\bar{u} > u_R$, the

individual prefers starting a business to working for a wage. The bank's expected profit, $\pi(R^W)$, is equal to that in (9), which is positive if $p_H Y \geq C - W$. The initial wealth should be high enough to equalize (at least) the difference between the lending costs and the project expected return. Otherwise, the bank would not lend, and the individual forced to be a wage worker. Thus, in choice by necessity, whether the initial wealth is used as collateral or invested in the business activity, as claimed in Proposition 1, the individual can be made worse off by borrowing constraints.

If $u_R \geq \bar{u}$, then the participation constraint is binding, and the incentive constraint is slack. The bank thus sets $R = Y - [(W + e + \omega)/p_H] \equiv R^W_{PC}$. In this case, the individual's expected utility is $u(R^W_{PC}) = u_R$. The entrepreneurial occupation gives the individual the same payoff as working for a wage and the individual will be indifferent between the two employment alternatives. The bank's expected profit is $\pi(R^W_{PC}) = p_H Y - e - \omega - I$, as in (12), which is negative if $\omega < \tilde{\omega}$. Thus, as stated in Proposition 2, when the reservation wage is relatively high, the bank can deny credit and constrain the individual, who is never worse off in choice by opportunity.

5.2 Competitive banking sector

If the banking sector were competitive, the individual would always have the opportunity to choose the best occupational alternative.

The equilibrium contract would be any linear combination of R and S such that the bank obtains zero profit and (IC) is satisfied. From the zero-profit condition and the binding (IC), the equilibrium repayment is $R_0 = [I - (1 - p_H)S]/p_H$, and the equilibrium security is $S_0 = C - p_H Y$, which is positive if $p_H Y < C$. If $p_H Y \geq C$, then S_0 is negative and the bank sets $S_0 = 0$. At this equilibrium collateral the bank still obtains zero profit and the incentive constraint holds. The individual's expected payoff from the project is $u(R_0, S_0) = W + \tilde{\omega}$. If $\omega < \tilde{\omega}$, then $u(R_0, S_0) > u_R$ and the individual will prefer to start a business. If $\omega > \tilde{\omega}$, then $u(R_0, S_0) < u_R$ and the individual will prefer to become a wage worker to the entrepreneurial occupation. In this case, the bank cannot reduce the repayment further which otherwise would result in a negative profit.

5.3 Risk aversion

Throughout the analysis, we assume universal risk neutrality. Now, we consider a

risk-averse individual and a risk-neutral lender and show that the qualitative results remain unchanged. Since a low outside payoff may represent high uncertainty, we restrict attention to the choice by necessity.

Let the individual's utility function be qausi-linear in the wealth and the effort cost, i.e. $W + u(\cdot) - e$ with $u'(\cdot) > 0$, $u''(\cdot) < 0$ and $u(0) = 0$. Let x be the net return in case of project success, then the participation constraint would be $p_H u(x) - (1 - p_H)u(S) - e \geq u(\omega)$ and the incentive constraint $p_H u(x) - (1 - p_H)u(S) - e \geq p_L u(x) - (1 - p_L)u(S)$. From the binding incentive constraint, the equilibrium repayment is R^*. If $W + u(\omega) < p_L(x)$, which corresponds to $W + u(\omega) < p_L e/\Delta p$, the individual initial wealth is lower than S_{PC}, then $u(x) = c/\Delta p$ and $u(S) = W$. Let $u(x) = u$, it follows that $x = v(u)$, where $v(u)$ is a convex function. The individual's expected utility from the entrepreneurial project is $u(R^*, W) = W + p_H u(x) - (1 - p_H)u(S) - e = p_L e/\Delta p > W + u(\omega)$. Thus, under risk aversion, if the outside job opportunities are low, the individual still prefers to become an entrepreneur out of necessity. The bank's expected profit is $\pi(R^*, W) = p_H Y + W - I - pHv(u) = p_H Y + W - I - p_H v(c/\Delta p)$. The loan contract will be profitable for the bank if $p_H Y + W \geq I + p_H v(c/\Delta p)$. Thus, the result in Proposition 1 holds, provided the individual is not too risk averse.

6 Conclusions

This paper provides a new interpretation of necessity and opportunity entrepreneurs and focuses on the behavior of a monopolistic lender in the presence of market frictions, such as asymmetric information and liquidity constraints. We analyze the occupational choice of an individual between setting up a firm or supplying the labor force for a wage. We show that borrowing constraints may force the agent to the suboptimal occupation out of necessity. Whereas, in the case of opportunity, the agent can choose indifferently between the two employment alternatives.

Understanding the factors behind the occupational choice is helpful to design adequate policy measures that encourage entrepreneurial activity so as to promote the economic growth. As argued by Blanchflower (2000), a country with high economic growth indicates high job opportunities, both as a self-employed entrepreneur as well

as a wage-paid worker. However, because of financial restrictions, entrepreneurship may not be a viable option for wealth-constrained agents, who do not have enough resources to secure against default. This is particularly true for younger people, who have less time to build up the capital needed to borrow and start a business. In addition to liquidity constraints, socio-demographic, cultural, technological, and institutional factors can be the main determinants of the entrepreneurial growth rate across countries (Noorderhaven et al., 2004; Armington and Acs, 2002; Estrin et al., 2013). Many OECD countries have adopted different programs to advocate entrepreneurship among unemployed, such as job traninng, start-up subsidies for the unemployed assistance in job searching (Caliendo and Künn, 2011; Battisti et al., 2019).

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