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FOSTERING ENTREPRENEURSHIP: THE CRUCIAL ROLE OF
MONITORING SCHEMES

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Research Line: Business Strategy

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Abstract

Several governments around the world seek to maximize economic growth and social welfare by creating entrepreneurship programs. These policies seek to propagate innovations, reduce unemployment and increase market competitiveness. However, the literature has not yet been able to infer the causal influence of these incentives on the propensity of an individual to create new businesses. In addition, several of these programs may suffer from moral hazards and adverse selection problems, which can lead to worse performance and the destruction of public value. Therefore, this study aims to empirically assess the influence of government-led startup programs on the entry of people into entrepreneurship. Furthermore, the use of monitoring schemes is evaluated to see how it can improve policy efficiency. To this end, a natural experiment is performed, based on a regression kink design with probabilistic outcomes. The results demonstrated that government-led programs generally decrease the likelihood of people starting new businesses. Nevertheless, when exploring the heterogeneity of policies, it was noted that programs with higher levels of monitoring increase venture creation, especially opportunity-driven entrepreneurship. These results are consistent with behavioral economics literature, which states that formal control systems influence the psychological motivation of individuals, reducing problems related to moral hazards and adverse selection.

Key words: Entrepreneurship; Government-led incentives; Monitoring schemes; Regression kink design.

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1. Introduction

Entrepreneurship has been widely cited as an important factor for economic growth, since innovations are generated (Schumpeter, 1934), market competitiveness is increased (Bjørnskov & Foss, 2016) and unemployment rates are reduced (Shane & Venkataraman, 2000). Some authors even consider entrepreneurial initiatives to be the critical engine of global economic development (e.g., Frid, Wyman and Coffey, 2016). Therefore, several public policies have been implemented with the main objective of stimulating entrepreneurship (Cho & Honorati, 2014), focusing particularly on the reduction of barriers caused by low levels of financial resources and human capital (Román, Congregado & Millán, 2013). Moreover, in order to deal with the negative effects of economic downturns, many governments have supported the creation and development of new firms by the unemployed, through the use of public programs that aim to facilitate the early stages of new ventures (Dencker et al., 2019). For instance, when considering the combined investment of France and Spain, between 2003 and 2014, approximately 23 billion euros were spent on government-led startup programs (Eurostat).

However, while obtaining credit and business knowledge are necessary prerequisites for entrepreneurship development (Newman et al., 2018), the causal effects of government-led programs on the creation of new ventures have not yet been determined, mainly because of endogeneity issues (Román et al., 2013; Laffineur et al., 2017). More importantly, public programs have been implemented and encouraged without careful consideration of what type of policy design is more efficient in enabling the formation of new businesses (Cho & Honorati, 2014). In this sense, problems with information asymmetry may exist in the programs developed (Arping et al., 2010), leading to an aggregate reduction in entrepreneurial activity. Therefore, instead of leveraging the ability of individuals to contribute in productive and creative ways to society (Dencker et al., 2019), these programs might be leading to the destruction of social value through excessive governmental assistance, especially if the budget is soft constrained, market signals are weak and goals are not well defined (Klein et al., 2013).

In this sense, by systematically examining the heterogeneity of public programs in Europe, and by proposing a novel econometric model for addressing the causality of these interventions, this study responds to numerous calls in recent academic literature (e.g., Ahunov & Yusupov, 2017; Foss, Klein & Bjørnskov, 2018; Stenholm, Acs & Wuebker, 2013; Laffineur et al., 2017). Thus, we seek to obtain better comprehension of the mechanisms related to public incentives and how these schemes influence the motivation to start new ventures. More

specifically, a higher level of monitoring in government-led programs and how it affects the intention to engage in entrepreneurial activities is assessed, reducing adverse selection and moral hazard issues that could be present. Thus, the following two questions are defined as the basis of this study: (1) Do public start-up policies foster the creation of new businesses? and (2) What is the influence of monitoring schemes on the intention of people to get involved in entrepreneurship?

The 2008 global financial crisis can be used to answer these questions since it was an exogenous shock, which led to a large increase in public incentives for entrepreneurship worldwide. In other words, governments responded to the high rates of unemployment caused by the economic recession by encouraging individuals to become self-employed (Román et al., 2013). Furthermore, since this crisis was completely unexpected, both from governmental and individual perspectives, then we can use the increase in public incentives, after 2008, as a natural experiment in a regression kink design with probabilistic outcomes.

Although the availability of financial resources and the increase of human capital are both important factors for the development of entrepreneurship (Kuratko, 2005; Newman et al., 2018), the results showed that public incentive programs may be highly susceptible to adverse selection and moral hazard issues. In other words, unmonitored public programs may end up harming the natural functioning of the market by supporting passive or ill-prepared individuals. Therefore, poorly designed policies might raise taxes on non-beneficiary citizens, decreasing economic freedom and leading to a general fall in the level of entrepreneurship. Nevertheless, public programs designed with objective monitoring are efficient and can contribute to an increase in entrepreneurial activities.

This research is important for the theory that relates public incentives to entrepreneurship, which has not yet clearly determined how better results can be achieved (Cho & Honorati, 2014; Devece et al., 2016). Furthermore, this study helps to clarify ambiguous objectives created from the use of public funds, highlighting how governments can act as strategic actors to shape business opportunities, influence firm-level outcomes, and enable value creation (Barney, 2005; Cabral, 2017; Mahoney, McGahan & Pitelis, 2009). In addition, by specifically focusing on how public incentives can be more effective in helping unemployed people to start new ventures, this study aims to help policymakers in the development of productive programs for entrepreneurs, this way enabling individuals to return to economic activity and improving social welfare (Dencker et al., 2019).

2. Theory and Hypotheses

Albeit the literature presents different ways of defining entrepreneurship, we consider the perspective that entrepreneurs are individuals who engage in activities that lead to the formation of new ventures, people who react to environmental changes and make decisions about how to exploit unique situations for making profit (Zahra & Dess, 2001; Figueroa-Armijos & Johnson, 2016). According to Thai and Turkina (2014), this view is best suited for analyzing the relationship between macro-factors and entry into entrepreneurship, therefore being adopted by data produced by the Global Entrepreneurship Monitor (GEM) - which measures entrepreneurship as: *“any attempt at new business or new venture creation, such as self-employment, a new business organization, or the expansion of an existing business, by an individual, a team of individuals, or established businesses”* (Reynolds et al., 2005, pp. 223).

Hence, several authors have addressed the important role that entrepreneurship plays in the economic growth of countries, positively influencing the creation of new jobs (Lippman, Davis & Aldrich, 2005; Lecuna, 2014; Foss, Klein & Bjørnskov, 2018), generating innovation (Galindo & Méndez, 2014), and enabling knowledge spillovers (Sanders, 2007; Heinonen & Hytti, 2016). Furthermore, it has also been widely stated that through more efficient use of resources, new ventures increase market competitiveness, (Hitt et al., 2001; Frid et al., 2016; Packard & Bylund, 2018), improving social welfare by meeting needs previously unmet (Newbert, 2003).

The literature has also distinguished the two principal motivational factors behind the creation of new ventures. On the one hand, there are the opportunity-driven entrepreneurs (i.e., those individuals who engage in new ventures by choice, in order to explore existing and identified business opportunities). On the other hand, necessity-driven entrepreneurs are defined as those individuals who choose to undertake entrepreneurship because there are no other income options, or that exist are unsatisfactory (Reynolds et al., 2003; Williams and Williams, 2012). The differences between these two types of entrepreneurship are very significant and can directly impact the nature and strategies of the businesses created (Block et al., 2015). Opportunity-driven entrepreneurship is more likely to involve a new product or service and is generally promoted by individuals with greater financial resources (Xavier-Oliveira et al., 2015; Reynolds et al., 2003). Also, since these entrepreneurs have more growth aspirations, then hiring workers is usually part of their business projects (Devece et al., 2016; Laffineur et al., 2017). Furthermore, opportunity-driven entrepreneurship has greater potential

to achieve higher levels of productivity (Block & Wagner, 2010), contributing more significantly to the generation of technological shocks that are identified as key factors of economic development (Castaño-Martínez et al., 2015; Xavier-Oliveira et al., 2015).

However, firms created out of necessity normally face disadvantages in terms of financial capital constraints, shortages of specific human resources, lack of contact networks, and restricted access to market information (Laffineur, 2017). In this context, necessity-driven businesses tend to employ fewer people compared to opportunity-driven firms, and their products may be less likely to bring major innovation to the market (Angulo-Guerrero et al., 2017). Moreover, these entrepreneurs normally engage in economic sectors with relatively low entry barriers and intense competition, which decreases their probability of surviving in the long-term (Block et al., 2015).

Despite being much less glamorous, necessity-driven entrepreneurship also yields positive outcomes, such as the development of a new basis for individuals own subsistence (Dencker et al., 2019) and the redistribution of wealth in society (Newbert, 2003; Lippman et al., 2005). In a recent study, Tobias et al. (2013) were also able to show that the necessity-driven entrepreneurial process could improve the quality of life for individuals in the Rwandan coffee industry. Additionally, some research in Germany has shown that one-third of new firms founded by necessity-driven people were able to create at least one job in addition to that of the business owner (Dencker et al., 2009). Moreover, in their attempts to fulfil basic needs, necessity-driven entrepreneurs also engage in a process of identifying and exploiting opportunities, which may lead to the generation of innovation (Dencker et al., 2019).

Altogether, given the large differences between the characteristics of opportunity and necessity-driven entrepreneurs, it has become critical that we form a better understanding of how government-led programs can foster the development of both types of entrepreneurship.

2.1. Public Programs for Entrepreneurship

As previously stated, considering the important role of entrepreneurship in economic growth, it has become essential to understand how government policies affect entrepreneurship rates in different regions (Laffineur et al., 2017) and how institutional conditions influence the motivation to engage in the creation of new ventures (Xavier-Oliveira et al., 2015; Boudreaux et al., 2019). In particular, it has been argued that the relationship between decisions to start

new businesses and the macro-level environment must be carefully analyzed by academic research (Foss et al., 2018), which should focus on the following factors: (1) economic situation of the country, (2) government expenditure on start-up incentives, and (3) the degree of national economic freedom (Román et. al., 2013).

In this sense, the literature has been almost unanimous in stating that entrepreneurship is stimulated in countries with strong property rights (Aghion, 2017; Bjørnskov & Foss, 2013), with low labor market regulations (Bergmann & Sternberg, 2007), with low taxes (Angulo-Guerrero et al., 2017) and with a high developed financial system (Boudreaux et al., 2019). This way, the extent to which individuals allocate socio-cognitive, physical and financial resources toward entrepreneurship is dependent on the degree to which institutional context either supports or constrains the profitability of new ventures (Williamson, 2000; Boudreaux et al., 2019).

Furthermore, besides seeking to promote a suitable environment for developing entrepreneurship, several governments also try to encourage the formation of new ventures through the use of *direct start-up incentives* (Heinonen & Hytti, 2016), which have the main objective of leveraging the financial resources of individuals and entrepreneurial knowledge (Castaño-Martínez et al., 2015). In this sense, by reducing the monetary and non-monetary costs of setting a business, these direct incentives attempt to promote entrepreneurship as a way for people to escape or avoid unemployment (Bergmann & Sternberg, 2007; Block et al., 2015). Reinforcing these ideas, the European Commission (2012) has argued that the access to financial resources, the development of training programs and the reduction of administrative burdens are key factors for stimulating entrepreneurial activity and the recovery of the European Union economy.

Accordingly, the use of start-up incentives is strongly based on propositions that *financial resources* and *human capital* are important factors for the creation of new ventures.

Financial Resources: The availability of financial resources has been largely reported as an essential antecedent of entrepreneurial activities since it alleviates constraints on liquidity (Fairlie & Krashinsky, 2012) and allows individuals to accept higher risks (Blanchflower & Oswald, 1998). This assumption stems from the view that the creation of new businesses requires a substantial sum of money (Kan & Tsai, 2006), and that unemployed individuals, with little personal wealth, may not be able to obtain start-up loans (Blanchflower et al., 2003) or get financing from banks (Chavis, Klapper & Love, 2011).

In addition, since financial capital is essential for acquiring relevant competencies, technologies and market share (Lippman et al., 2005), it is critical to the competitiveness of small-sized firms (Motta, 2018). These arguments have been consolidated since the seminal work of Evans and Jovanovic (1989), which showed that financial capital is paramount for starting a business and liquidity constraints may exclude those with insufficient funds at their disposal.

Furthermore, the literature has highlighted the existence of a negative relationship between financial constraints of individuals and their respective entrepreneurial self-efficacy (Venugopal, Viswanathan & Jung, 2015; Newman et al., 2018), which can be defined as a person's confidence in their own ability to conduct activities dedicated to the creation of new ventures (Chen, Greene, & Crick, 1998). Therefore, some researchers have stated that policies aimed at promoting low-interest loans, opening up access to credit and providing guarantee systems contribute to the creation of new businesses, thereby encouraging innovative activities from companies that otherwise would not take place (Evans & Jovanovic, 1989; González, Jaumandreu & Pazó, 2005; Castaño-Martínez et al., 2015).

Human Capital: the literature on entrepreneurship has also used the human capital theory (Mincer, 1958; Becker, 1964) to explain why some particular individuals are more likely to open and expand new businesses than others (Martin et al., 2013). The main idea is that people with higher levels of knowledge, greater skills and more managerial capabilities have a higher probability of being successful (Ployhart & Moliterno, 2011; Unger et al., 2011). Moreover, individuals with greater stocks of human capital are less uncertain about their own efficacy, being able to learn more quickly about environmental changes, which increase the likelihood of them discovering new opportunities and setting up a new firm (Shane & Venkatraman, 2000; Baptista, Karaöz & Mendonça, 2014). In addition, knowledge is positively related to planning capability (Frese et al., 2007), which influences approaches to the exploitation of perceived opportunities (Shane & Venkataraman, 2000; Unger et al., 2011).

Some authors have also argued that specific aspects of human capital - which are particular to entrepreneurship - may have a stronger relationship with new venturing than general human capital (Kuratko, 2005; Martin et al., 2013). In other words, the application of knowledge would be facilitated when human capital is related to the current tasks of running a business (Unger et al., 2011). In this sense, individuals with higher stocks of specific human

capital are less uncertain about their efficiency, being able to learn more quickly about environmental conditions and better exploit profitable opportunities (Baptista et al., 2014).

Altogether, the lack of access to credit and an overall shortage of knowledge on how to run a new business are among the most popular explanations for the poor performance of microfirms (Lafortune, Riutortz & Tessada, 2017; Baptista et al., 2014). Therefore, by increasing the availability of *financial resources* through grants and microcredit, and by leveraging *human capital* through the availability of startup training, government-led programs may enhance the capability and the motivation toward entrepreneurship, also increasing the types of opportunities that can be explored (Acs et al., 2016; Dencker et al., 2019). This is also consistent with the argument that entrepreneurial actions respond to incentives which are themselves shaped by institutions and economic policies (Aghion, 2017). Thus, we expect that higher start-up incentives within a country might lead to a higher probability of people opening new businesses. These arguments lead to the first hypothesis of this study:

H1. Government-led startup incentives increase the likelihood of individuals engaging in entrepreneurial activities.

2.2. Monitoring Program Participants

Although the availability of financial capital is of great importance for developing entrepreneurial activities, it should be considered that *information asymmetry problems* may emerge if government-led programs are not properly designed. In this sense, by trying to address the failures of markets, the programs may end up causing more distortions than they actually resolve (Arping, Lóránth & Morrison, 2010; Figueroa-Armijos & Johnson, 2016). Hence, as well stated by Klein et al., (2013), the destruction of public value can arise through excessive resource provision, especially if the public budget is soft constrained, goals are not objectively defined, and participants are not correctly monitored.

Primarily, when government spending increases, the state needs more revenue, which is usually earned through tax increases on non-beneficiary individuals (Figueroa-Armijos & Johnson, 2016; Boudreaux, Nikolaev & Klein, 2019). With higher taxes - which represent additional costs to productive market activities - the expected profitability of a venture is reduced (Wood, Bylund & Bradley, 2016). This situation might lead to government spending actually displacing private investments and disincentivizing individuals to create new

businesses (Klein & Foss, 2010; Boudreaux et al., 2019). In this sense, prior research also indicates that a heavy regulatory system and tax burden negatively influence the entrepreneurial evaluation of opportunities (Wood, Bylund & Bradley, 2016).

Second, by trying to foster entrepreneurship among unemployed people, governments might be distorting career choices (Román et al., 2013; Figueroa-Armijos & Johnson, 2016). In other words, by providing direct incentives, government-led programs may end up deforming market competition and taking credit away from productive ventures (Arping et al., 2010). A similar effect is reported in banking literature, which reports that state-owned banks might misallocate credit by using political criteria to choose the firms that will benefit from these incentives (La Porta et al., 2002). This literature also highlights the harms of leveraging badly performing companies (Firth et al., 2008) and funding redundant projects that drive private credit out of the market (Lazzarini et al., 2015).

Furthermore, *moral hazards* can arise when individuals accept to take excessive risks or make less of an effort because other parties bear the costs if things go wrong (Hölmstrom, 1979). Therefore, by subsidizing entrepreneurship and reducing credit rationing among unemployed, government-led programs may suffer from a moral hazard-induced principal-agent problem (Arping et al., 2010).

This kind of issue can be more serious in programs that use *grants* to foster entrepreneurship than in other forms of incentives, such as microcredit or training. This occurs because grants are donation-based incentives given to unemployed people who do not have much to lose if the new venture fails (Vecchi, Brusoni & Borgonovi, 2014). In other words, while financial resources are essential for encouraging entrepreneurship, if not properly monitored, these same incentives can lead individuals to make less of an effort (Lelarge, Sraer & Thesmar, 2010; Arping et al., 2010).

In this sense, by increasing the level of monitoring in public programs that offer grants, two things can happen that affect the intention of people to get involved in entrepreneurial activities. On the one hand, if we consider people who claim to be involved in entrepreneurship only to gain government benefits, then an increase in monitoring would lead to the departure of these individuals from the programs (Shane, 2009). In other words, increased control would lead to the departure of those who have no real desire to create new businesses, passive individuals who only seek to receive the subsidies made available when they claim to be involved in business activities (Román et al., 2013). Thereby, from the increase in the use of

monitoring schemes, there would be a decrease in the aggregate level of people claiming to be involved in entrepreneurship.

On the other hand, for people who have the genuine intention to create a new business, the increase in the monitoring level can lead to the correct execution of activities that are essential to entrepreneurship, such as the development of a good business plan and the passing of milestones (Castaño-Martinez et al., 2015). Accordingly, highly monitored programs – with a great level of control over which individuals receive subsidies and a high level of supervision over how beneficiaries use the resources provided - may increase entrepreneurial activities (Karlan & Zinman, 2011; Grimm & Paffhausen, 2015).

Reinforcing this second perspective, Blattman et al. (2016) performed a field experiment with war-affected women in northern Uganda and found that the increase of supervision over how entrepreneurs spent their grants strengthened the commitment of participants, which, consequently, led to a higher survival rate of micro-enterprises. These findings are consistent with behavioral economics literature, which argues that formal control systems influence psychological motivation toward the achievement of goals (Tayler & Bloomfield, 2011). Thereby, an increase would be expected in the probability of individuals engaging in entrepreneurial activities when grants are monitored than when financial resources are simply made available.

As both explanations are reasonable, two contrary hypotheses are constructed and will be empirically assessed:

H2a: Highly monitored grants keep more individuals away from startup programs than unmonitored grants, leading to a lower rate of entry into entrepreneurship.

H2b: Highly monitored grants are more effective in supervising individuals than unmonitored grants, leading to a higher rate of entry into entrepreneurship.

2.3. Promoting Opportunity-driven Entrepreneurship

Another important point to be considered is that markets work from a balance of supply and demand (Blanchard & Quah, 1989). Therefore, government-led programs can also be analyzed in this light. In other words, for an offered program, there must be individuals who

demand it and thereby agree to follow its pre-stipulated rules. As a consequence, a program that greatly benefits participants in the form of financial aid - and which does not present sufficient penalties for those who do not create a firm - may be highly demanded, even by people who do not intend to engage in entrepreneurial activities from the outset (Román et al., 2013; Shane, 2009). This situation can lead to an *adverse selection problem* (Arping et al., 2010).

Thereby, programs that simply provide financial capital, and which are not properly monitored, can suffer from an adverse selection problem. In such cases, individuals insufficiently prepared for entrepreneurship would also demand and participate in these programs, since there would be relatively little harm to these people if the firms are not actually created (Arping et al., 2010; Figueroa-Armijos & Johnson, 2016). This point was also raised by Shane (2009) when mentioning the differences in opportunity costs that exist between distinct individuals who choose to undertake entrepreneurial initiatives.

Evans and Jovanovic (1989) also address the idea of adverse selection problems that exist in early-stage entrepreneurship programs (i.e., with little information available) and justify it as one of the main causes of the lack of sufficient investment in entrepreneurship by private capital markets. According to the authors, these arguments also reinforce Knight's idea (1921) of taking personal risks as one of the crucial characteristics of entrepreneurship.

Therefore, with an increase in the monitoring level of public programs, we should expect an increase in the opportunity cost of potential participants. Accordingly, only people who have sufficient confidence in their business ideas and who have identified real opportunities to start new ventures would agree to participate in these highly monitored programs. Put differently, only those with higher entrepreneurial self-efficacy and a greater sense of capability to succeed in setting up new businesses would accept the rules, thereby choosing to engage in these programs. As previously reported, these characteristics of having growth aspirations, higher perception of success and higher levels of productivity are more present in opportunity-driven entrepreneurs than in necessity-driven ones (Block & Wagner, 2010; Devece et al., 2016; Laffineur et al., 2017). These ideas lead us to the third and last hypothesis of this study:

H3: Monitored grants are more effective at increasing the likelihood of individuals engaging in opportunity-driven than in necessity-driven entrepreneurship.

3. Empirical Strategy

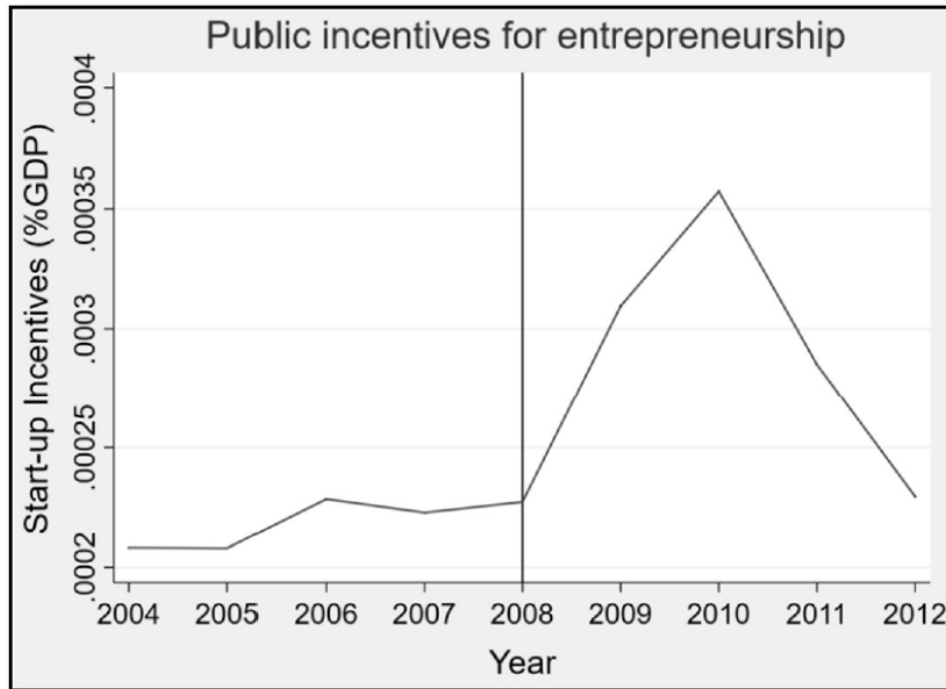
As previously stated, although the literature has emphasized that obtaining credit and business knowledge are necessary prerequisites for the development of entrepreneurship (Newman et al., 2018), most of the empirical research that has been done so far has only been able to infer a correlation between public programs and the creation of new ventures (e.g., Laffineur et al., 2017). The difficulty in inferring causal relationships stems from the ambiguity generated by reverse causality, since a highly entrepreneurial environment may also influence government policies. In order to address this existing empirical gap, this study considers the 2008 global financial crisis to be an exogenous shock, which led to a large increase in public incentives for entrepreneurship. Put differently, governments responded to the high rates of unemployment caused by the crisis by encouraging individuals to become self-employed (Román et al., 2013). Since this crisis was completely unexpected, both from governments and individuals' perspectives, then we can use the increase in public entrepreneurship programs, after 2008, as a natural experiment.

For the analysis of government-led entrepreneurship programs, data made publicly available by the European Commission as code 7 within the Active Labor Market Programs (ALMPs) - called startup incentives - was considered. These programs were designed to reduce barriers caused by low levels of financial and human capital (Román et al., 2013), thereby aiming to enhance the creation of new ventures (Laffineur et al., 2017). As defined by the European Commission (2018, p. 22), the startup incentives “cover measures that promote entrepreneurship by encouraging the unemployed and other target groups to start their own business or to become self-employed”. In practice, these incentives take the form of different schemes, including financial grants, microcredit, tax reductions, and entrepreneurship training. In the econometric model developed in this study, public programs are measured as national expenditure on startup incentives as a percentage of the GDP of a given country.

When evaluating the percentage expenditures of 16 European countries in these entrepreneurship programs, on their respective GDPs, an increase of 13.69% between the pre-crisis period (i.e., 2003 to 2007) and the post-crisis period (i.e., 2009 to 2014) was noted. The countries under analysis are Austria, Belgium, the Czech Republic, Estonia, Finland, France, Germany, Hungary, Ireland, Italy, Norway, Poland, Slovakia, Slovenia, Spain and Sweden. Graph 1, below, shows the increase in government spending on these programs following the

global financial crisis of 2008, considering the average expenditure of the 16 countries analyzed.

Graph 1: Government-based expenditures to foster entrepreneurship



Note: the graph shows the increase in public incentives for entrepreneurship after the 2008 financial crisis, considering the average expenditure of 16 European countries: Austria, Belgium, Czech Republic, Estonia, Finland, France, Germany, Hungary, Ireland, Italy, Norway, Poland, Slovakia, Slovenia, Spain and Sweden.

For the measurement of entrepreneurial activities, data provided by the Global Entrepreneurship Monitor (GEM) was used. GEM performs an annual survey with at least 2000 individuals randomly chosen from each country. Thus, any individual that is involved with the creation of a new business, or that has created a new firm in the last 42 months is considered to be an entrepreneur (Reynolds et al., 2003). Besides that, GEM is able to differentiate opportunity-driven entrepreneurs (i.e., those who engage in new ventures by choice, aiming to explore identified opportunities) from necessity-driven entrepreneurs (i.e., those who start their business due to a lack of alternative employment) (Block et al., 2015).

To evaluate the *first hypothesis*, which predicts that the effect of government-led startup incentives on entrepreneurship entry would be positive, a regression kink design (RKD) is used (Nielsen, Sørensen & Taber, 2010). This methodology bears the possibility for identifying the

effect of a policy variable even in the absence of traditional instruments (Card et al., 2015). The idea of an RKD is to look for an induced kink in the mapping between the assignment variable and the outcome variable which coincides with the kink in the policy implementation. Therefore, by comparing the relative magnitude of the two kinks, it is possible to identify the “local average response” (Altonji & Matzkin, 2005) or the “treatment-on-the-treated” parameter (Florens et al., 2008), which explains the causal effect of the independent variable on the dependent variable (Card et al., 2015).

Hence, this study follows the estimation method of Simonsen, Skipper and Skipper (2016), who also used an RKD in a probabilistic function, but in a different context (i.e., the price sensitivity of demand for prescription of drugs). This way, the effect of the exogenous increase in startup incentives in each country - after the 2008 global financial crisis - on the likelihood of individuals creating new businesses is tested. Therefore, the discrete outcome ***Entrep_{ij,t}*** can be defined as an individual-specific probability of entering entrepreneurship or not (i.e., a binary response). Analytically, the following logistic regression is performed:

Equation 1:

$$Entrep_{i,j,t} = f(\beta_0 + \beta_1 Incentives_{j,t} + \beta_2 Incentives_{j,t} \cdot Postcrisis + Educ_i + X_{j,t} + \delta_t + \alpha_j + \varepsilon_{i,j,t})$$

where $f(.)$ is the logit function. The subscripts i , j and t indicate individual, country and year, respectively.

The dependent variable is ***entrepreneurship entry***, which equals one for individuals engaging in entrepreneurial activities, and equals zero otherwise. In the econometric models, the dependent variable is also analyzed in relation to the different motivations for each individual when deciding to engage in entrepreneurial activity. Thus, we seek to determine the effects of government-led programs on opportunity-driven and necessity-driven entrepreneurship. ***Incentives_{j,t}*** is measured as annual national expenditure on startup incentives over each country's GDP. The key variable of interest is the interaction between ***startup incentives*** and the dummy ***postcrisis*** (which equals one for periods after 2008 and zero otherwise).

Education levels are captured by ***Educ_i*** that correspond to the dummies *educ_b*, *educ_c* and *educ_d*, which are evaluated in relation to the omitted dummy *educ_a*. These variables represent each person's level of formal education, where *educ_a* corresponds to *secondary general or less*, *educ_b* corresponds to *secondary vocational or professional*, *educ_c* represents *professional after secondary or 1st level of professional higher*, and finally *educ_d* corresponds to *bachelor, master or doctor*. Educational level has been included in the equation because the literature provides ample evidence about the role of formal education as a relevant determinant of entry into nascent entrepreneurship (Gubik & Farkas, 2016; Boudreaux et al., 2019). However, the direction of the relationship of formal education with entrepreneurial intention is not unanimous. Some studies report a positive relationship, stating that the knowledge, skills and competences obtained in educational institutions contribute to the identification of opportunities (e.g., Baptista et al., 2014; Castaño-Martínez et al., 2015). Other studies suggest that more qualified people tend to get better jobs, which diminishes their desire to start new businesses (e.g., Brown, Farrell & Harris, 2011).

The vector ***X_{j,t}*** represents countries observable variables that should be used as controls. Therefore, it includes ***GDP growth***, ***unemployment rate***, ***working-age percentage*** and ***population*** (all from the World Bank database). It also considers countries ***economic freedom*** (index developed by the Fraser Institute). All these variables are included because the entrepreneurship literature has highlighted their importance in influencing the propensity of an individual to engage in business creation. However, in order to avoid doubts about the effects coming from the inclusion of controls, the results will be presented with and without these variables.

The arguments for the effects of ***GDP growth*** on entrepreneurship entry are diverse. While strong economic growth represents greater opportunities for business creation, this scenario may also correspond to more jobs being offered, which would lessen motivation for self-employment (Thurik et al., 2008; Laffineur et al., 2017). Similarly, the effects of ***unemployment*** on entrepreneurial intentions may be contrary. On one hand, a low unemployment rate represents a market with higher demand for consumption, which favors the creation of new enterprises and innovations (Rampini, 2004). On the other hand, the founding of a new company may be an option to escape unemployment, so that the relationship between unemployment and entrepreneurship intentions would be positive (Baptista et al., 2014).

The effect of *economic freedom* on entry into entrepreneurship is more unanimous in the literature. In societies that have a lower level of economic freedom, entrepreneurs must also contend with extractive governments and political markets, which might inhibit the extent to which entrepreneurs can capitalize on their specialized knowledge and psychological resources (Boudreaux et al., 2019). Hence, the incentives to individuals engaging in entrepreneurship are highly dependent on the extent to which private property rights are enforced and protected (Foss et al., 2018). Therefore, economic freedom, defined as market economy-oriented institutions and policies, can be seen as a significant aspect for entrepreneurial activity (Angulo-Guerrero et al., 2017). Therefore, we include the levels of economic freedom for each country, produced annually by the Fraser Institute. The index is composed of five major areas: (I) Size of government (e.g., transfers, subsidies and marginal tax rates); (II) Legal structure and property rights (e.g., the integrity of the legal system); (III) Sound money (e.g., inflation rate, freedom to own foreign accounts); (IV) Freedom to trade internationally (e.g., regulatory trade barriers, importing and exporting tariffs); and (V) Regulation of credit, labor, and business (e.g., costs of obtaining credit, power of labor unions). The economic freedom index from The Fraser Institute is similar to other cross-national indicators used in the literature, such as the quality indices of the regulatory environment and government efficiency developed by the World Bank (Boudreaux et al., 2019).

Following Angulo-Guerrero et al. (2017), we also include the variable *working-age percentage* (i.e., the percentage of the population between 15 and 64 years old) because it is assumed that a larger share of working-age population leads to higher rates of entrepreneurship. The coefficients δ_t and α_j respectively indicate the use of time and country-level fixed effects. Finally, internal biases, provoked by the correlation within groups, are also corrected by clustering standard errors at country level. According to the **first hypothesis**, it is expected that β_2 (i.e., the coefficient of interest) would be positive, meaning that the exogenous increase in startup incentives augments the probability of individuals engaging in entrepreneurship.

For evaluating the **second hypothesis** – which aims to evaluate the effect of monitoring grants – it was first necessary to isolate the startup incentives that correspond only with grants. For this, all the qualitative reports related to the public programs were read and analyzed. These reports are also made available by the European Commission and contain detailed information about specific characteristics of each program (i.e., targeted individuals, forms of support, related laws, etc.). This way, it was possible to identify and codify four types of aid to entrepreneurship, which are: (1) Grants; (2) Microcredit; (3) Tax reduction; and (4) Training.

After this first classification and coding, it was also verified, among the programs designs that provided grants, which of them had some type of monitoring. In other words, we evaluated which programs placed the retention of financial funds by beneficiaries conditional on the execution of activities previously established (i.e., the achievement of milestones; execution of business plans; formalization of the company). Thus, it was possible to analyze how a higher monitoring level affects the probability of individuals engaging in entrepreneurial activities. Appendix I presents the description and classification of all programs evaluated in this study. Analytically, the two models below were performed:

Equation 2a:

$$Entrep_{i,j,t} = f(\beta_0 + \beta_3 Grants_{j,t} + \beta_4 Grants_{j,t} \cdot Postcrisis + \delta_t + \alpha_j + Educ_i + X_{j,t} + \varepsilon_{i,j,t})$$

Equation 2b:

$$Entrep_{i,j,t} = f(\beta_0 + \beta_5 Grants_Monit_{j,t} + \beta_6 Grants_Monit_{j,t} \cdot Postcrisis + \delta_t + \alpha_j + Educ_i + X_{j,t} + \varepsilon_{i,j,t})$$

In equation 2a, the variable ***Grants_{j,t}*** corresponds to startup incentives that provide grants for unemployed individuals aiming to engage in entrepreneurial activities. National expenditure is measured as a percentage of the GDP of a country. Again, the subscripts *i*, *j* and *t* indicate *individual*, *country* and *year*, respectively. The other variables are the same as in equation 1.

In equation 2b, the variable ***Grants_Monit_{j,t}*** corresponds to start-up incentives that provide grants for unemployed individuals and also monitor the achievement of milestones previously established. If the ***hypothesis 2a*** of this study is correct, then the coefficient β_6 in equation 2b will be lower than the coefficient β_4 in equation 2a. However, if the ***hypothesis 2b*** is correct, then the coefficient β_6 in equation 2b will be greater than the coefficient β_4 in equation 2a.

Finally, for evaluating the **third hypothesis**, the equations 3a and 3b are performed:

Equation 3a:

$$Nec_Entrep_{i,j,t} = f(\beta_0 + \beta_7 Grants_Monit_{j,t} + \beta_8 Grants_Monit_{j,t}.Postcrisis + \delta_t + \alpha_j + Educ_i + X_{j,t} + \varepsilon_{i,j,t})$$

Equation 3b:

$$Opp_Entrep_{i,j,t} = f(\beta_0 + \beta_9 Grants_Monit_{j,t} + \beta_{10} Grants_Monit_{j,t}.Postcrisis + \delta_t + \alpha_j + Educ_i + X_{j,t} + \varepsilon_{i,j,t})$$

According to the third hypothesis, an increase in the level of monitoring leads to a higher probability of entering opportunity-driven rather than necessity-driven entrepreneurship. Thereby, β_{10} in equation 3b is expected to be greater than β_8 in equation 3a.

4. Results

Table 1 presents descriptive statistics of data and table 2 shows the correlation between variables.

Table 1 - Descriptive Statistics

Country	Entrepreneurship Entry		Public start-up incentives	Educational Level									N (obs)
	Necessity-Driven	Opportunity-Driven	% of GDP (/10 ³)	Educ_a	Educ_b	Educ_c	Educ_d	Population (*10 ³)	GDP Growth	Working Ages	Unemployment	Economic Freedom	
Austria	.00835	.06097	.05343	.29283	.47245	.07084	.16388	8416	.01446	.67413	.05251	7.7070	13284
Belgium	.00514	.02989	.03208	.11971	.34742	.41583	.11704	10764	.01435	.65572	.07866	7.3882	26222
Czech Republic	.01846	.05763	.03223	.16978	.60047	.09424	.13551	10448	.01653	.69265	.06941	7.2531	8988
Estonia	.01713	.08214	.10576	.08807	.57518	.19199	.14476	1318	.03036	.66003	.08594	7.7181	6245
Finland	.00885	.04414	.17508	.18435	.45853	.19671	.16041	5341	.01009	.65941	.07997	7.8153	20884
France	.00837	.03038	.32068	.20907	.35685	.30831	.12577	64695	.01063	.64571	.08822	7.3528	21261
Germany	.01315	.03986	.76339	.27578	.22705	.44031	.05687	81625	.00962	.66218	.07840	7.6468	50994
Hungary	.01875	.04847	.06293	.37442	.29307	.24072	.09178	10014	.01793	.68806	.08533	7.2503	22237
Ireland	.01340	.05138	.00000	.13211	.28906	.41704	.1618	4439	.03452	.67947	.09110	7.9934	19401
Italy	.00570	.02739	.27371	.30207	.47166	.08784	.13844	58829	.00292	.65775	.08498	7.1824	23144
Norway	.00464	.05550	.01808	.07229	.4469	.25656	.22426	4843	.01649	.65938	.03479	7.5900	20432
Poland	.03787	.05455	.47252	.10715	.49089	.11879	.28317	38072	.03299	.70443	.11674	7.2012	7718
Slovakia	.03875	.07585	.36845	.27401	.46187	.05895	.20517	5409	.02157	.71593	.13749	7.4103	7277
Slovenia	.00688	.03942	.32443	.23164	.41642	.28174	.0702	2030	.01834	.69561	.06736	6.9167	25170
Spain	.01090	.04267	.90537	.38985	.23271	.2471	.13034	45660	.00793	.68135	.16305	7.4441	258131
Sweden	.00347	.03207	.25706	.41389	.30793	.14418	.13399	9148	.03676	.64971	.06365	7.4845	44084
Mean	.01373	.04826	.26032	.22731	.40302	.22319	.14646	22565.68	.01846	.67384	.0861	7.4596	35967
SE	.01074	.01594	.26799	.10993	.11367	.12608	.05636	26182.06	.01019	.02086	.03117	.27521	60508.65
Max	.03875	.08214	.90537	.41389	.60047	.44031	.28317	81625	.03676	.71593	.16305	7.9934	258131
Min	.00347	.02739	.00000	.07229	.22705	.05895	.05687	1318	.00292	.64571	.03479	6.9167	6245

Note: All data is considered as averages for each country, between 2003 and 2014. *Necessity-driven entrepreneurs* are individuals engaging in startup activities because other options are absent or unsatisfactory. *Opportunity-driven entrepreneurs* are considered those who engage in new ventures by choice, in order to explore existing and identified business opportunities (both are measured using the GEM database). *Public startup incentives* are measured as government expenditures for entrepreneurship as a proportion of countries respective GDPs (Data made available by the European Commission). Educational level is measured by the GEM, where *Educ_a* is the lowest level, and *Educ_d* is the highest level. *Population* is the number of inhabitants in each country, *GDP Growth* and *Unemployment Rate* are taken from the World Bank Database. *Working Ages* is the percentage of individuals who are between 15 and 64 years old (World Bank data). *Economic Freedom* is an index developed by the Fraser Institute, where 10 is the maximum grade.

Table 2 - Correlation Matrix

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
(1) Necessity-driven Entrepren.	1.000											
(2) Opportunity-driven Entrepren.	-0.022*	1.000										
(3) Public Start-up Incentives (%GDP)	0.011*	-0.012*	1.000									
(4) Population	0.006*	-0.015*	0.619*	1.000								
(5) GDP Growth	-0.004*	0.011*	-0.338*	-0.233*	1.000							
(6) Working Ages	0.026*	0.027*	0.226*	-0.081*	0.103*	1.000						
(7) Unemployment	0.020*	-0.018*	0.724*	0.312*	-0.491*	0.105*	1.000					
(8) Economic Freedom	-0.002	0.020*	-0.144*	0.016*	0.301*	-0.193*	-0.219*	1.000				
(9) Educ_a: secondary general or less	-0.010*	-0.046*	0.127*	0.076*	0.099*	0.103*	0.032*	0.016*	1.000			
(10) Educ_b: secondary vocational or professional	0.007*	-0.007*	-0.153*	-0.116*	-0.032*	-0.072*	-0.043*	-0.048*	-0.446*	1.000		
(11) Educ_c: professional higher	0.002	0.022*	0.059*	0.081*	-0.183*	-0.085*	0.111*	-0.025*	-0.390*	-0.389*	1.000	
(12) Educ_d: bachelor, master or doctor	0.002	0.043*	-0.041*	-0.049*	0.145*	0.067*	-0.129*	0.076*	-0.258*	-0.257*	-0.225*	1.000

Note: All data is considered as averages for each country, between 2003 and 2014. *Necessity-driven entrepreneurs* are individuals engaging in startup activities because other options are absent or unsatisfactory. *Opportunity-driven entrepreneurs* are considered those who engage in new ventures by choice, in order to explore existing and identified business opportunities (both are measured using GEM database). *Public startup incentives* are measured as government expenditures for entrepreneurship as a proportion of countries respective GDPs (Data made available by European Commission). Educational level is measured by GEM, where *Educ_a* is the highest level, and *Educ_d* is the lowest level. *Population* is the number of habitants in each country, *GDP Growth* and *Unemployment Rate* are taken from the World Bank Database. *Working Ages* is the percentage of individuals who are between 15 and 64 years old (World Bank data). *Economic Freedom* is an index developed by the Fraser Institute, where 10 is the maximum grade.

* shows significance at the .01 level

Table 3 below shows the classification of all public programs analyzed in this work, maintaining the same codes used by the European Commission. In this analysis, it is demonstrated what is the form of incentive for each program (i.e. grants, microcredit, training or tax subsidies). For those grant-based programs, we also analyze which of them have a monitoring scheme and which do not. Appendix A presents the complete description of all the programs.

Table 3 - Government-based Programs for Entrepreneurship

Country	Program Code (European Commission)	Years of operation	Program Type	Monitoring Scheme Present (For Grants)
Austria	17	2004 - 2014	Grants	No
Belgium	34	2004 - 2014	Microcredit	-
Belgium	45	2004 - 2014	Training	-
Belgium	107	2004 - 2014	Grants	No
Belgium	160	2004 - 2014	Grants	No
Belgium	163	2004 - 2014	Training	-
Czech Republic	12	2004 - 2014	Grants	No
Czech Republic	13	2004 - 2014	Grants	No
Czech Republic	17	2004 - 2009	Grants	No
Czech Republic	24	2011 - 2014	Grants	No
Estonia	4	2004 - 2014	Grants	Yes
Estonia	32	2008 - 2014	Grants	No
Estonia	33	2011 - 2014	Grants	No
Estonia	34	2009 - 2014	Training	-
Finland	11	2004 - 2013	Grants	Yes
Finland	55	2005 - 2014	Grants	Yes
France	38	2004 - 2014	Tax Subsidy	-
France	59	2004 - 2009	Microcredit	-
France	121	2006 - 2014	Grants	Yes
France	122	2009 - 2014	Training	-
Germany	9	2004 - 2007	Grants	No
Germany	49	2004 - 2009	Grants	No
Germany	74	2005 - 2014	Grants	No
Germany	79	2004 - 2014	Grants	Yes
Germany	109	2009 - 2014	Microcredit	-
Hungary	16	2004 - 2014	Grants	No
Hungary	17	2004 - 2014	Grants	No
Ireland	3	2004 - 2014	Grants	No
Italy	19	2004 - 2014	Grants	No
Italy	65	2004 - 2006	Tax Subsidy	-
Italy	115	2006 - 2009	Training	-
Italy	116	2006 - 2009	Grants	No
Italy	117	2006 - 2009	Training	-
Italy	145	2007 - 2014	Training	-
Italy	146	2007 - 2014	Grants	No
Italy	147	2007 - 2014	Grants	No
Italy	158	2012 - 2014	Grants	No

Table 3 - Government-based Programs for Entrepreneurship - Continuation

Country	Program Code (European Commission)	Years of operation	Program Type	Monitoring Scheme Present (For Grants)
Norway	25	2004 - 2014	Grants	No
Poland	5	2005 - 2014	Microcredit	-
Poland	19	2005 - 2014	Grants	Yes
Slovakia	5	2004 - 2014	Grants	No
Slovakia	11	2004 - 2014	Grants	No
Slovenia	17	2005 - 2006	Training	-
Slovenia	65	2008 - 2014	Training	-
Slovenia	88	2010 - 2011	Grants	No
Slovenia	93	2010 - 2013	Microcredit	-
Slovenia	101	2011 - 2014	Microcredit	-
Slovenia	112	2013 - 2014	Training	-
Spain	20	2004 - 2014	Grants	No
Spain	21	2004 - 2014	Grants	No
Spain	22	2004 - 2012	Grants	No
Spain	23	2004 - 2014	Grants	No
Spain	24	2004 - 2014	Grants	No
Spain	25	2004 - 2014	Tax Subsidy	-
Spain	42	2004 - 2014	Grants	No
Spain	44	2004 - 2014	Grants	No
Spain	45	2004 - 2014	Grants	No
Spain	46	2004 - 2014	Tax Subsidy	-
Spain	80	2012 - 2014	Grants	No
Spain	82	2013 - 2014	Grants	No
Sweden	9	2004 - 2014	Grants	Yes
Sweden	69	2004 - 2014	Grants	No
Sweden	70	2007 - 2014	Grants	No

Note: the table shows the classification of all public programs analyzed in this work, maintaining the same codes used by the European Commission. In this analysis, it is demonstrated what is the form of incentive for each program (i.e. grants, microcredit, training or tax subsidies). For those grant-based programs, we also analyze which of them have a monitoring scheme and which do not. Public startup incentives are measured as government expenditures for entrepreneurship as a proportion of countries respective GDPs.

Table 4 below reports the results of the logistic regression for equation 1, which assesses the effect of government-led startup incentives on the likelihood of individuals engaging in entrepreneurial activities. Since the dependent variable comes from data provided by the Global Entrepreneurship Monitor, it is also possible to differentiate between necessity and opportunity-driven entrepreneurship. The total entrepreneurship variable represents both necessity and opportunity-driven entrepreneurs. Models 1, 3 and 5 present the results without the observable control variables. Models 2, 4 and 6 show the results with the control variables.

Table 4 - Public Startup Incentives on Entrepreneurship Entry

	(1)	(2)	(3)	(4)	(5)	(6)
	DV: Total Entrepreneurship		DV: Necessity Entrepreneurship		DV: Opportunity Entrepreneurship	
Incentives	172.2** (68.82)	417.0*** (107.6)	601.4*** (116.6)	711.3*** (137.7)	34.66 (80.24)	276.6** (124.8)
Incentives * post_crisis	-558.3*** (140.0)	-250.1*** (72.94)	-371.1** (174.0)	-503.3*** (86.98)	-608.1*** (156.1)	-206.1*** (74.43)
Population		-4.55e-08 (3.55e-08)		-1.42e-07** (6.94e-08)		-1.15e-08 (4.41e-08)
GDP_Growth		0.400 (0.974)		1.017 (1.319)		0.116 (1.063)
Working_Ages		5.361 (7.041)		4.358 (11.34)		5.318 (6.080)
Unemployment		-1.794** (0.708)		3.730*** (0.926)		-3.126*** (0.809)
Economic_Freedom		0.550** (0.233)		-0.0142 (0.372)		0.692*** (0.212)
Educ_b: secondary vocational		0.303*** (0.0352)		0.163*** (0.0321)		0.342*** (0.0438)
Educ_c: professional higher		0.551*** (0.0745)		0.139*** (0.0352)		0.661*** (0.0905)
Educ_d: bachelor, master or doctor		0.660*** (0.0949)		0.162** (0.0773)		0.763*** (0.123)
Constant	-2.922*** (0.0810)	-10.65** (4.546)	-5.376*** (0.123)	-7.421 (8.180)	-3.076*** (0.0839)	-12.10*** (3.907)
Observations	575,472	575,472	575,472	575,472	575,472	575,472
Year FE	yes	yes	yes	yes	yes	yes
Country FE	yes	yes	yes	yes	yes	yes

Note: All models are logit functions, where the dependent variable is 1 if individuals engage in entrepreneurial activities and 0 otherwise. *Total Entrepreneurship* is 1 if *necessity* or *opportunity-driven entrepreneurship* is 1. The observations are the same in all models because the same individuals are interviewed. *Incentives* are measured as government startup expenditures as a proportion of countries respective GDPs. *Post_crisis* is 1 for periods after 2008, and zero otherwise. Educational level is measured by GEM, where *Educ_a: secondary general or less* is the lowest level (omitted variable), and *Educ_d* is the highest level. *Working_Ages* is the percentage of the population between 15 and 64 years old. *Unemployment* is the annually measured rate by the World Bank. *Economic Freedom* is an index developed by the Fraser Institute, where 10 is the maximum grade.

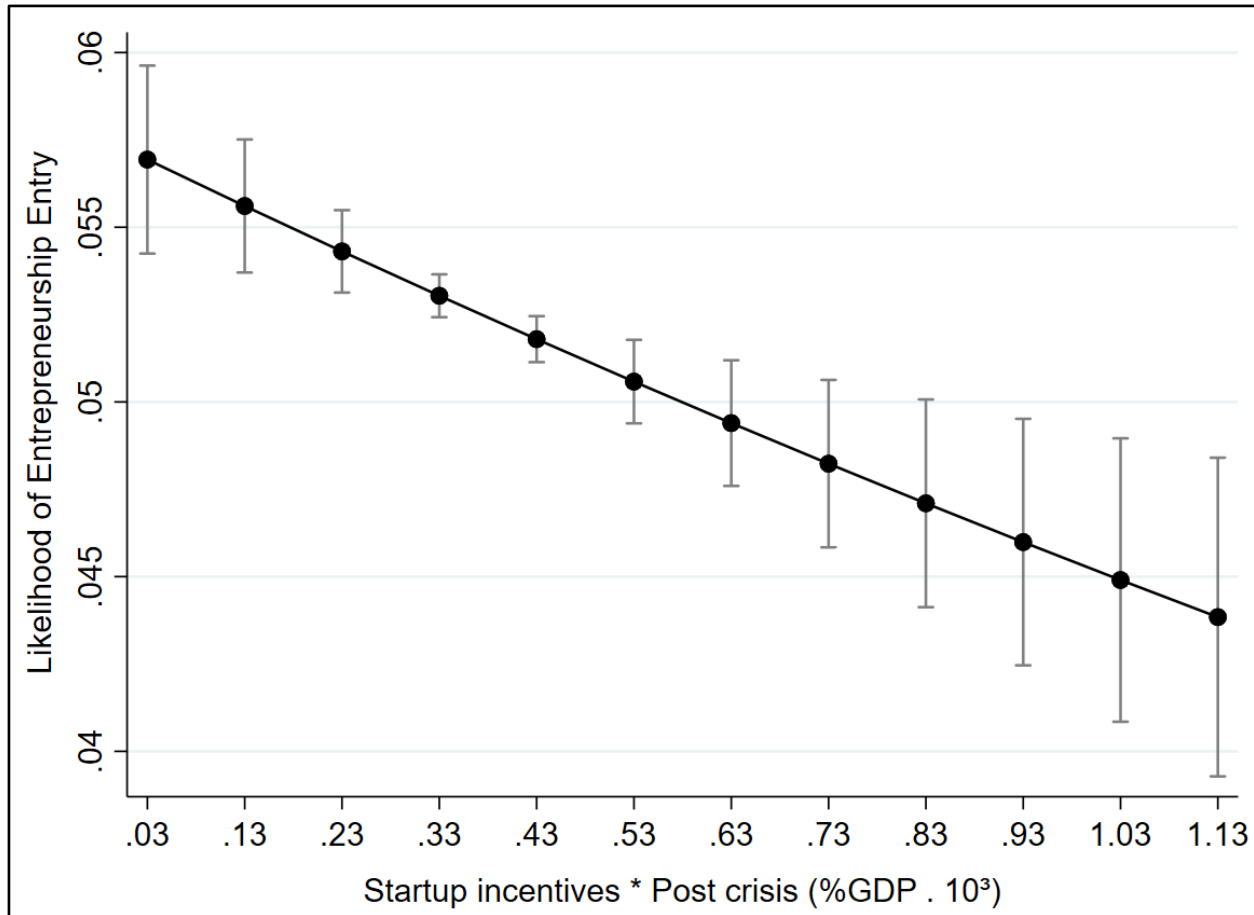
*** p<0.01, ** p<0.05, * p<0.1 - Robust standard errors in parentheses.

Different from what was expected in hypothesis 1, public startup programs reduce the likelihood of individuals engaging in entrepreneurial activities. This can be visualized by the *Incentives * post_crisis* coefficient, which was negative and statistically significant in all models.

For a correct interpretation of the coefficients in a logistic regression, we must analyze the results in the margin. Thus, graph 2 below shows the probability of individuals creating new businesses when public incentives are increased. This graph refers to the results of model 2

presented in table 4. As shown, the increase in government spending by 0.001% of GDP decreases the likelihood of people engaging in entrepreneurial activities by more than 1%.

Graph 2 – Likelihood of entrepreneurship entry vs public program expenditure



Note: marginal results that indicate the likelihood of individuals engaging in entrepreneurship activities versus public spending in startup incentive programs, given in GDP percentage. Adjusted predictions with 95% confidence intervals.

For analyzing *hypothesis 2*, the logistic regressions evidenced in equations 2.a and 2.b were performed. Table 5 below reports the results found. Model 1 represents equation 2.a without the inclusion of observable control variables. Model 2 presents this same equation with the control variables. Model 3 refers to equation 2.b without the inclusion of controls. Finally, model 4 presents the results of equation 2.b with the included controls. These models consider total entrepreneurship as the dependent variable.

Table 5 - Public Startup Grants on Total Entrepreneurship

	Dependent Variable: Total Entrepreneurship			
	(1)	(2)	(3)	(4)
Grants	204.3*** (74.85)	461.5*** (108.7)		
Grants * post_crisis	-651.8*** (148.9)	-282.8*** (88.00)		
Grants_monit			-1,676*** (417.3)	-706.7* (365.0)
Grants_monit * post_crisis			1,759*** (562.4)	761.7** (370.6)
Population		-5.24e-08 (3.63e-08)		5.81e-08 (3.68e-08)
GDP_Growth		0.581 (1.327)		-0.475 (1.379)
Working_Ages		1.568 (8.070)		7.258 (8.620)
Unemployment		-1.871** (0.829)		-2.328*** (0.861)
Economic_Freedom		0.538* (0.280)		0.893** (0.371)
Educ_b: secondary vocational		0.307*** (0.0364)		0.302*** (0.0320)
Educ_c: professional higher		0.541*** (0.0726)		0.528*** (0.0676)
Educ_d: bachelor, master or doctor		0.656*** (0.0956)		0.661*** (0.0957)
Constant	-2.948*** (0.0802)	-7.937 (5.166)	-2.686*** (0.0831)	-15.24** (6.735)
Observations	556,071	556,071	556,071	556,071
Year FE	yes	yes	yes	yes
Country FE	yes	yes	yes	yes

Note: All models are logit functions, where the dependent variable is 1 if individuals engage in entrepreneurial activities and 0 otherwise. *Grants* are measured as government expenditures for entrepreneurship as a proportion of countries respective GDPs, considering only monetary resources given to beneficiaries. *Post_crisis* is 1 for periods after 2008, and zero otherwise. Education level is measured by GEM, where *Educ_a: secondary general or less* is the lowest level (omitted variable), and *Educ_d* is the highest level. *Working_Ages* is the percentage of the population between 15 and 64 years old. *Unemployment* is the annually measured rate by the World Bank. *Economic Freedom* is an index developed by the Fraser Institute, where 10 is the maximum grade.

*** p<0.01, ** p<0.05, * p<0.1 - Robust standard errors in parentheses.

As can be seen from the above results, the effect of unspecified grants on the likelihood of individuals opening new businesses is negative. This can be verified by the negative sign of the *Grants * post_crisis* coefficient in models 1 and 2 of table 5.

However, as predicted by *hypothesis 2b*, monitored grants are more effective in influencing propensity to engage in entrepreneurial activities than general grants. This can be verified by the positive sign of the *Grants_monit * post_crisis* coefficient on models 3 and 4. Thus, the increased level of monitoring in startup programs can reduce moral hazard issues, positively influencing people to enter entrepreneurship. This way, the government – which plays the role of principal in this principal-agent relationship – can have its interests prevailed with increased monitoring.

Although the results do not confirm *hypothesis 2a* – which forecasted that a high degree of monitoring would keep low effort individuals away from startup programs, leading to a lower aggregate level of entrepreneurship entry – we cannot completely rule out that this effect may exist. Since we are looking at the result of aggregated data, the only possible inference is that the positive effect of better controlling and supervising individuals is greater than the negative effect of keeping low effort individuals away from the startup programs.

Table 6, below, shows the results for both necessity and opportunity-driven entrepreneurship. As can be seen in the coefficient for *grants_monit * post_crisis*, monitoring has no significant effect for entrepreneurship by necessity, but the effect is positive and statistically significant for entrepreneurship by opportunity. Therefore, *hypothesis 3* – which predicted that monitored grants are more effective at increasing the likelihood of individuals engaging in opportunity-driven than in necessity-driven entrepreneurship – is confirmed.

An important point must be highlighted here. Although much of the literature directly associates unemployment with necessity-driven entrepreneurship (e.g., Rampini, 2004; Shane, 2009; Baptista et al., 2014), it is possible that unemployed people decide to engage in entrepreneurship because of suitable, identified business opportunities. It is even possible that some individuals decide to leave their original jobs, becoming unemployed for a while, and then benefit from a startup public program, seeking entry into entrepreneurship. Similarly, it is also possible to imagine a scenario in which unemployed individuals believe that their business ideas can bring higher income or more satisfaction than new jobs in other companies. Overall, we can also associate unemployed individuals with opportunity-driven entrepreneurship.

Table 6 - Grants on Necessity and Opportunity-driven Entrepreneurship

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	DV: Necessity-driven Entrepreneurship				DV: Opportunity-driven Entrepreneurship			
Grants	585.4*** (144.6)	696.1*** (145.0)			75.39 (89.09)	339.2*** (128.5)		
Grants * post_crisis	-306.3 (211.2)	-510.9*** (158.0)			-732.3*** (161.0)	-219.9** (85.58)		
Grants_monit			-217.8 (504.4)	-476.6 (934.2)			-1,933*** (533.7)	-683.3** (302.6)
Grants_monit * post_crisis			-154.4 (460.2)	379.5 (848.2)			2,102*** (721.3)	743.2** (376.5)
Population		-1.41e-07 (8.75e-08)		2.90e-08 (9.62e-08)		-2.56e-08 (4.37e-08)		5.47e-08 (3.64e-08)
GDP_Growth		0.943 (2.017)		-0.0493 (1.826)		0.0299 (1.462)		-0.831 (1.477)
Working_Ages		2.060 (14.67)		8.317 (16.80)		3.046 (6.943)		7.654 (7.538)
Unemployment		3.786*** (1.272)		3.051** (1.312)		-3.257*** (0.911)		-3.643*** (0.875)
Economic_Freedom		-0.0212 (0.547)		0.841 (0.616)		0.671*** (0.238)		0.893*** (0.301)
Educ_b: secondary vocational		0.179*** (0.0303)		0.174*** (0.0273)		0.342*** (0.0431)		0.337*** (0.0399)
Educ_c: professional higher		0.132*** (0.0371)		0.120*** (0.0346)		0.648*** (0.0867)		0.636*** (0.0824)
Educ_d: bachelor, master or doctor		0.188** (0.0735)		0.194** (0.0758)		0.753*** (0.120)		0.756*** (0.120)
Constant	-5.365*** (0.141)	-5.833 (10.85)	-5.278*** (0.110)	-17.86 (14.24)	-3.106*** (0.0796)	-10.29** (4.224)	-2.804*** (0.126)	-15.61*** (5.682)
Observations	556,071	556,071	556,071	556,071	556,071	556,071	556,071	556,071
Year FE	yes	yes	yes	yes	yes	yes	yes	yes
Country FE	yes	yes	yes	yes	yes	yes	yes	yes

Note: All models are logit functions, where the dependent variable is 1 if individuals engage in entrepreneurial activities and 0 otherwise. *Grants* are measured as government expenditures for entrepreneurship as a proportion of countries respective GDPs, considering only monetary resources given to beneficiaries. *Post_crisis* is 1 for periods after 2008, and zero otherwise. Educational level is measured by the GEM, where *Educ_a: secondary general or less* is the lowest level (omitted variable), and *Educ_d* is the highest level. *Working_Ages* is the percentage of the population between 15 and 64 years old. *Unemployment* is the rate measured annually by the World Bank. *Economic Freedom* is an index developed by the Fraser Institute, where 10 is the maximum grade.

*** p<0.01, ** p<0.05, * p<0.1 - Robust standard errors in parentheses.

5. Robustness Checks

5.1. Validation of exogeneity

In order to validate the exogeneity of the financial crisis in 2008, which led governments to increase their startup incentives, we can simulate the crisis in previous years. If the event used is really exogenous, then we should not find statistically significant results in these simulations.

Thus, table 7 below repeats the models executed in table 4, now considering the crisis in 2006 and 2007.

Table 7 - Robustness Tests: Simulating Crisis on 2006 and 2007

	Simulation of crisis on 2006			Simulation of crisis on 2007		
	(1) DV: Total Entrepreneurship	(2) DV: Necessity Entrepreneurship	(3) DV: Opportunity Entrepreneurship	(4) DV: Total Entrepreneurship	(5) DV: Necessity Entrepreneurship	(6) DV: Opportunity Entrepreneurship
Incentives	439.9*** (118.6)	635.7*** (166.5)	332.8*** (126.9)	421.8*** (115.4)	701.8*** (153.9)	288.5** (127.5)
Incentives * post_crisis (2006)	-92.41 (92.06)	-2.915 (150.0)	-156.3 (99.12)			
Incentives * post_crisis (2007)				-94.09 (81.48)	-236.9 (148.3)	-107.1 (80.81)
Population	-5.57e-08 (3.80e-08)	-1.57e-07* (8.24e-08)	-1.61e-08 (4.28e-08)	-5.34e-08 (3.90e-08)	-1.47e-07* (7.61e-08)	-1.64e-08 (4.60e-08)
GDP_Growth	0.202 (0.965)	0.265 (1.490)	0.0474 (1.029)	0.181 (0.989)	0.635 (1.410)	-0.0376 (1.079)
Working_Ages	6.101 (6.572)	8.529 (10.44)	4.837 (6.070)	6.343 (6.599)	6.278 (10.87)	5.789 (6.008)
Unemployment	-2.537*** (0.767)	2.432** (0.987)	-3.762*** (0.863)	-2.448*** (0.791)	2.644*** (1.014)	-3.644*** (0.881)
Economic_Freedom	0.649** (0.268)	0.249 (0.436)	0.754*** (0.224)	0.624** (0.263)	0.118 (0.412)	0.739*** (0.223)
Educ_b: secondary vocational	0.301*** (0.0348)	0.156*** (0.0332)	0.341*** (0.0438)	0.302*** (0.0358)	0.161*** (0.0327)	0.342*** (0.0445)
Educ_c: professional higher	0.548*** (0.0736)	0.132*** (0.0351)	0.658*** (0.0897)	0.550*** (0.0754)	0.137*** (0.0360)	0.661*** (0.0915)
Educ_d: bachelor, master or doctor	0.659*** (0.0944)	0.164** (0.0786)	0.762*** (0.122)	0.660*** (0.0950)	0.162** (0.0779)	0.763*** (0.123)
Constant	-11.80*** (4.290)	-12.01 (8.527)	-12.20*** (3.765)	-11.79*** (4.269)	-9.623 (8.229)	-12.72*** (3.749)
Observations	575,472	575,472	575,472	575,472	575,472	575,472
Year FE	yes	yes	yes	yes	yes	yes
Country FE	yes	yes	yes	yes	yes	yes

Note: All models are logit functions, where the dependent variable is 1 if individuals engage in entrepreneurial activities and 0 otherwise. *Incentives* are measured as government expenditures for entrepreneurship as a proportion of countries respective GDPs. In models (1), (2) and (3), *post_crisis* is 1 for periods after 2006, and zero otherwise. In models (4), (5) and (6), *post_crisis* is 1 for periods after 2007, and zero otherwise. Educational level is measured by GEM, where *Educ_a: secondary general or less* is the lowest level (omitted variable), and *Educ_d* is the highest level. *Working_Ages* is the percentage of the population between 15 and 64 years old. *Unemployment* is the rate measured annually by the World Bank. *Economic Freedom* is an index developed by the Fraser Institute, where 10 is the maximum grade.

*** p<0.01, ** p<0.05, * p<0.1 - Robust standard errors in parentheses.

As can be seen in the above models, the coefficients for *Incentives*post_crisis (2006)* and *Incentives*post_crisis (2007)* are not statistically significant in any of the models. Thus, these results reaffirm that the 2008 financial crisis can be used as an exogenous event.

5.2. Withdrawal of private credit

An alternative factor that could explain the diminishing likelihood of people engaging in entrepreneurial activities could be the withdrawal of private credit from the market after the crisis. This would be due to the fact that many banking institutions suffered major cash constraints following the 2008 financial crisis.

Therefore, in the following models, the control variables for private credit, which is proxied in two ways are also considered. The first measure considered is *Bank_credit*, which is taken from World Bank database and defined as *domestic credit to private sector by banks (% of GDP)*. The second proxy is *Private_equity*, which is from the Standard & Poor database. For this second measure, we follow the methodology presented in the works of Bernstein et al.(2017), thus considering all the transactions that contain at least one investment firm reporting interest in one of the three business stages: (1) Seed/startup, (2) Early venture; or (3) Incubation.

Therefore, table 8 replicates the models in table 4, now considering *Bank_credit* and *Private_equity* as control variables. The coefficient of interest, related to *Incentives*post_crisis*, remains negative and statistically significant (p-value < 0.001) in all models.

Table 8 - Robustness Test: Government Startup Incentives on Entrepreneurship Entry, Considering Bank Credit and Private Equity as Additional Controls

	Considering Bank_Credit			Considering Private_Equity		
	(1)	(2)	(3)	(4)	(5)	(6)
	Total Entrepreneurship	Necessity Entrepreneurship	Opportunity Entrepreneurship	Total Entrepreneurship	Necessity Entrepreneurship	Opportunity Entrepreneurship
Incentives	397.7** (156.1)	712.3*** (203.7)	262.6 (163.2)	362.8*** (123.4)	665.3*** (140.8)	203.1 (136.3)
Incentives * post_crisis	-269.1*** (81.55)	-502.8*** (85.93)	-234.3*** (78.15)	-301.5*** (87.91)	-509.3*** (101.4)	-282.9*** (89.57)
Population	-4.71e-08 (3.26e-08)	-6.15e-08 (1.27e-07)	-1.76e-08 (4.49e-08)	-3.29e-08 (4.02e-08)	-1.28e-07* (7.08e-08)	4.11e-09 (4.87e-08)
GDP_Growth	0.248 (1.442)	-0.823 (2.299)	-0.0661 (1.571)	0.285 (0.992)	1.093 (1.329)	-0.0499 (1.087)
Working_Ages	4.617 (7.802)	9.039 (12.83)	4.030 (6.844)	5.007 (7.517)	5.091 (11.41)	4.834 (6.505)
Unemployment	-1.741* (0.905)	2.538 (2.090)	-3.073*** (0.968)	-1.705** (0.706)	3.819*** (0.959)	-3.002*** (0.797)
Economic_Freedom	0.534* (0.284)	0.0333 (0.408)	0.654** (0.268)	0.493* (0.253)	-0.00455 (0.411)	0.604** (0.242)
Bank_credit	0.0533 (0.252)	-0.518 (0.553)	0.0777 (0.206)			
Private_equity				-6.33e-07 (2.17e-06)	7.20e-08 (1.91e-06)	-1.32e-06 (2.54e-06)
Educ_b: secondary vocational	0.289*** (0.0282)	0.170*** (0.0353)	0.323*** (0.0335)	0.296*** (0.0326)	0.159*** (0.0335)	0.335*** (0.0409)
Educ_c: professional higher	0.535*** (0.0684)	0.142*** (0.0386)	0.640*** (0.0822)	0.546*** (0.0725)	0.139*** (0.0355)	0.656*** (0.0889)
Educ_d: bachelor, master or doctor	0.644*** (0.0893)	0.181** (0.0793)	0.739*** (0.113)	0.660*** (0.0942)	0.158** (0.0800)	0.765*** (0.123)
Constant	-10.05* (5.357)	-11.11 (10.03)	-10.93** (4.796)	-10.08* (5.193)	-8.112 (8.487)	-11.22** (4.619)
Observations	543,025	543,025	543,025	567,807	567,807	567,807
Year FE	yes	yes	yes	yes	yes	yes
Country FE	yes	yes	yes	yes	yes	yes

Note: All models are logit functions, where the dependent variable is 1 if individuals engage in entrepreneurial activities and 0 otherwise. *Incentives* are measured as government expenditures for entrepreneurship as a proportion of countries respective GDPs. *Post_crisis* is 1 for periods after 2008, and zero otherwise. Education level is measured by the GEM, where *Educ_a*: secondary general or less is the lowest level (omitted variable), and *Educ_d* is the highest level. *Working_Ages* is the percentage of the population between 15 and 64 years old. *Unemployment* is the rate measured annually by the World Bank. *Economic Freedom* is an index developed by the Fraser Institute, where 10 is the maximum grade. *Bank_credit* is defined as domestic credit to private sector by banks (% of GDP). *Private_equity* is the total amount in transactions that contain at least one investment firm reporting interest in one of the three stages: Seed/startup, Early venture; or Incubation (the Standard & Poor database).

*** p<0.01, ** p<0.05, * p<0.1 - Robust standard errors in parentheses.

Furthermore, the models executed in table 5 – which consider the effect of *grants* and *grants_monitored* over entrepreneurship entry – were also reperformed considering *Bank_credit* and *Private_equity* as control variables. The results, presented in table 9, remain similar to those reported in table 5.

Table 9 - Robustness Test: Grants on Total Entrepreneurship, Considering Bank Credit and Private Equity as Additional Controls

Dependent Variable: Total Entrepreneurship				
	Considering bank_credit as control		Considering private_equity as control	
	(1)	(2)	(3)	(4)
Grants	433.3*** (152.6)		407.5*** (118.1)	
Grants * post_crisis	-334.3** (129.9)		-394.0*** (75.36)	
Grants_monit		-822.0 (500.1)		-751.5** (374.1)
Grants_monit * post_crisis		924.7** (464.3)		861.1** (390.4)
Population	-3.85e-08 (4.40e-08)	8.60e-08* (5.02e-08)	-4.76e-08 (3.67e-08)	5.82e-08* (3.32e-08)
GDP_Growth	0.160 (1.713)	-0.606 (1.568)	0.536 (1.407)	-0.560 (1.407)
Working_Ages	0.599 (9.380)	10.48 (8.692)	0.214 (8.894)	9.297 (8.568)
Unemployment	-1.907* (1.057)	-2.440** (0.979)	-1.718** (0.873)	-2.391*** (0.902)
Economic_Freedom	0.558 (0.373)	0.947** (0.416)	0.470 (0.290)	0.829** (0.379)
Bank_credit	-0.0339 (0.282)	-0.110 (0.188)		
Private_equity			-2.52e-06 (2.13e-06)	-1.14e-06 (2.84e-06)
Educ_b: secondary vocational	0.294*** (0.0297)	0.292*** (0.0268)	0.301*** (0.0339)	0.297*** (0.0296)
Educ_c: professional higher	0.524*** (0.0662)	0.512*** (0.0614)	0.537*** (0.0710)	0.524*** (0.0657)
Educ_d: bachelor, master or doctor	0.642*** (0.0907)	0.649*** (0.0920)	0.658*** (0.0952)	0.661*** (0.0952)
Constant	-7.507 (6.842)	-17.96*** (6.922)	-6.562 (5.817)	-16.13** (6.800)
Observations	523,624	523,624	548,406	548,406
Year FE	yes	yes	yes	yes
Country FE	yes	yes	yes	yes

Note: All models are logit functions, where the dependent variable is 1 if individuals engage in entrepreneurial activities and 0 otherwise. *Grants* are measured as government expenditures for entrepreneurship as a proportion of countries respective GDPs, considering only monetary resources given to beneficiaries. *Post_crisis* is 1 for periods after 2008, and zero otherwise. Educational level is measured by GEM, where *Educ_a: secondary general or less* is the lowest level (omitted variable), and *Educ_d* is the highest level. *Working_Ages* is the percentage of the population between 15 and 64 years old. *Unemployment* is the rate measured annually by the World Bank. *Economic Freedom* is an index developed by the Fraser Institute, where 10 is the maximum grade. *Bank_credit* is defined as domestic credit to private sector by banks (% of GDP). *Private_equity* is the total amount in transactions that contain at least one investment firm reporting interest in one of the three stages: Seed/startup, Early venture; or Incubation (the Standard & Poor database).

*** p<0.01, ** p<0.05, * p<0.1 - Robust standard errors in parentheses.

6. Discussion

Although the availability of financial resources and the development of human capital are very important factors for leveraging entrepreneurial activities (Fairlie & Krashinsky, 2012; Blanchflower et al., 2003; Venugopal et al., 2015; Unger et al., 2011), the results of this study do not support the hypothesis that general incentives increase startup entry. Actually, it was found that unrestricted government-led programs can make individuals less likely to start new ventures. This negative effect can be partially explained by information asymmetry problems that may emerge if the programs are not properly designed (Arping et al., 2010; Figueroa-Armijos & Johnson, 2016). Furthermore, when government spending increases, additional tax costs are incurred by non-beneficiary individuals, which might reduce the expected profitability of ventures and displace private investments (Wood et al., 2016; Boudreaux et al. 2019). Therefore, by trying to address the failures of markets, the programs may end up causing more distortions than actually resolving them (Shane, 2009; Klein & Foss, 2010).

Meanwhile, when exploring the heterogeneity of government-led programs, it has been shown that highly monitored schemes improve the quality of incentives, leading to a higher probability of individuals getting involved in new venture creation. In other words, an increase in the level of monitoring is efficient in solving moral hazard issues, thereby better supervising people in the correct fulfillment of the essential steps of entrepreneurial activity. These results are consistent with the study of Blattman et al. (2016), which proposed that increased supervision activity strengthens the commitment and performance of participants in early-stage firms. Furthermore, it cannot be ruled out that, as the level of control increases, there might be a reduction in the participation of low effort individuals in startup programs. Nevertheless, the aggregate result showed that highly monitored schemes lead to more people intending to create new ventures.

In addition, highly monitored programs also lead to a greater incidence of opportunity-driven rather than necessity-driven entrepreneurship. This result can be explicated by the proposition that opportunity-driven individuals possess greater entrepreneurial self-efficacy and a greater sense of capability to succeed in setting up new businesses (Block & Wagner, 2010; Devece et al., 2016). Also, these individuals normally have higher growth intentions and a greater willingness to employ other people (Xavier-Oliveira et al., 2015; Reynolds et al., 2003; Laffineur et al., 2017). Therefore, an adverse selection problem can be corrected by the increase in the monitoring level. In other words, with higher control, those less capable are pushed away from the startup programs, leading to a higher rate of opportunity-driven than necessity-driven entrepreneurship.

Moreover, in line with some previous research (e.g., Shane, 2009; Román et al., 2013), we also question the suitability of unrestricted government-led programs in promoting entrepreneurship. In fact, these types of less rigid programs may actually lower the incidence of individuals creating new businesses, probably because of moral hazard and adverse selection issues. In this sense, these programs would lead to perverse public outcomes, caused by overprovision and inefficient use of government resources (Klein et al., 2013). Accordingly, in order to be effective, public programs must be carefully designed, based on objective criteria and close monitoring of the beneficiaries (Arping et al., 2010).

Using a methodology that allows causal inference, this research also responds to some calls from various, related literature to address the real influence of country-level policies on the motivation of an individual to start new businesses (e.g., Ahunov & Yusupov, 2017; Devece et al., 2016). Therefore, by exploring the heterogeneity of public programs and adopting better-adjusted measures, we respond to requests for distinguishing different types of startup incentives, helping to guide policymakers in better promoting productive entrepreneurship (Laffineur et al., 2017). This way, the key question on which interventions are most effective is addressed (Cho & Honorati, 2014), also highlighting one mechanism to leverage performance expectations. As such, the crucial role that monitoring schemes play in generating value in public-private relationships was demonstrated.

Accordingly, government-led programs should have a great level of control over who the individuals receiving subsidies are, and how they use the resources provided, instead of just making financial capital available (Castaño-Martinez et al., 2015). In this sense, the disposal of financial resources should be combined with detailed business planning, construction of objectively measured milestones and close monitoring to ensure that it leads to increased productive entrepreneurial activity (Karlan & Zinman, 2011; Grimm & Paffhausen, 2015).

Overall, the results are consistent with behavioral economics literature, which state that formal control systems influence psychological motivation and activities (Tayler & Bloomfield, 2011). Thus, some problems caused by adverse selection and moral hazard issues may be reduced with higher levels of information and more severe control (Hölmstrom, 1979). In addition, by showing that monitored schemes lead to a higher incidence of opportunity-driven entrepreneurship, this study presents a way of implementing startup policies that seek a form of governance more related to induced innovation (Aghion, 2017). Therefore, programs should be the result of planned and supervised allocation of resources rather than the consequence of random actions, as it is usually the case (Vecchi et al., 2014).

7. Limitations and Future Research

Some important limitations of this study must be highlighted. First, although it has been shown that increasing the level of monitoring leads to a greater intention of individuals engaging in entrepreneurship, the question of how these entrepreneurial intentions lead to economic growth and job creation is still pending. In fact, as well stated by Grimm and Paffhausen (2015), policy implementers and researchers must focus not only on the positive or negative effects of policies, but they must also always provide a cost-benefit analysis. If the performance implications of government-led programs are not clearly determined, then policies cannot be successful in pursuing public value (Rotger, Gørtz & Storey, 2012; McGahan, Zelner & Barney, 2013).

Second, two problems related to limitation of data should be reported: (i) the use of annually aggregated public spending measures on startup programs, which do not consider possible variations of these incentives in the same year; and (ii) the questions asked by the *Global Entrepreneurship Monitor (GEM)* do not consider a distinction between individuals who participated in government-led programs from those who have not been beneficiaries. Therefore, we follow Román et al. (2013), considering aggregate data in our analyses. A solution to this type of problem would be to perform field experiments that could specifically isolate treatment and control groups.

8. Conclusion

Although governments should look for ways to encourage entrepreneurship (Aghion, 2017; Boudreaux et al., 2019), this study showed that it is not any type of program that can bring positive results. In fact, it has been demonstrated that poorly designed programs can actually decrease the likelihood of individuals engaging in entrepreneurial activities. However, the efficiency of programs is substantially improved when they have monitoring schemes in their design. In this sense, as well predicted by the theory of behavior economics and contracts (Holmstrom, 1979; Tayler & Bloomfield, 2011), a higher level of control can reduce problems related to moral hazards and adverse selection. Therefore, since these programs are constantly used as a way to foster economic growth (Román et al., 2013), then the results found here can be very helpful in recommending public policies aiming to encourage entrepreneurship.

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Appendix A: Description of Government-Based Programs for Entrepreneurship

The information below was extracted from the European Commission's official website: <https://ec.europa.eu/social/main.jsp?catId=1143&intPageId=3227&langId=en>, except for the classification of monitoring, which was defined by the author only for grant-type programs. This classification was based on the aim description, actions instrument and countries respective laws.

Country: Austria

Intervention Code (European Commission): 17

Years: 2004 - 2014

Aim: Provision of assistance to secure the survival of new businesses during the first few months, thus ensuring lasting market success. The possibility of extending start-up assistance to persons not receiving benefits is primarily designed to make it easier for re-starters to enter the business creation program and also provides this group with security during the start-up phase of new businesses.

Actions Instrument: As part of the business start-up program for the unemployed, the AMS provides assistance during the business start-up phase in the form of start-up assistance. The amount of the start-up allowance is based on the amount of unemployment or emergency benefit being paid or on the living allowance, including any family allowances. There is also a supplement equal to the valid social insurance contribution for the minimum contribution of commercial social insurance, currently equal to 4.50 per day.

Program type: Grants

Monitoring Scheme: No

Country: Belgium

Intervention Code (European Commission): 34

Years: 2004 – 2014

Aim: To promote business start-up by jobseekers.

Actions Instrument: A conditional loan is granted in the form of a credit and covers (wholly or partly) material and non-material investments, financial investments and necessary working capital, including those necessary to get the activity off the ground. The normal term of the loan is at least 5 years and maximum 20 years. The co-financing fund (Fonds de Participation) can grant an extension of between 3-5 years for the capital repayment. The maximal amount of the loan is fixed at 40,000 euros. The interest rate is fixed by the board of directors of the co-financing fund and cannot be below 5% of the usual interest rate on the capital market or below 3% annually. It can be revised after 5 years.

Program type: Microcredit

Country: Belgium

Intervention Code (European Commission): 45

Years: 2004 – 2014

Aim: To promote the support offered to jobseekers willing to create a small business in order to integrate them in the labour market.

Actions instrument: "The support implies a preparation to the creation as well as the management of a company, assistance during the different steps to be carried out and in the realization of the feasibility study. It also includes guidance towards creation of enterprise, follow-up as well as a networking of new entrepreneurs at the local European level. The teaching step used was aimed at encouraging participants' autonomy in the administrative steps on the basis of a personalized assistance with clear and accessible objectives. This service was implemented by ORBEM's

partners (non-profit making associations). There is no duration planned: it depends on the individual project of the jobseeker."

Program Type: Training

Country: Belgium

Intervention Code (European Commission): 107

Years: 2004 - 2014

Aim: Premium granted to persons with disability starting their own business, resuming their activities or trying to maintain them, despite the handicap. To promote self-employment of people with disabilities.

Actions instrument: The monthly premium is 33% of the average minimal guaranteed revenue according to the Collective agreement n 43 (1,234.20 in 2005). It is granted for a maximum 1 year and is not renewable.

Program Type: Grants

Monitoring Scheme: No

Country: Belgium

Intervention Code (European Commission): 160

Years: 2004 - 2014

Aim: Financial measure which is intended to offset the loss of performance inherent to the worker's disability.

Actions instrument: The installation premium is intended to help the disabled person who wishes to be self-employed, resumes his business after an interruption caused by an accident or illness, or who is trying to keep his business imperiled by his disability and whose yield loss must be compensated. The financial contribution is fixed for one year and may be extended depending on the persistence of yield loss.

Program Type: Grants

Monitoring Scheme: No

Country: Belgium

Intervention Code (European Commission): 163

Years: 2004 - 2014

Aim: To offer specialized assistance for job seekers who wish to become self-employed or start their own business.

Actions instrument: Creating activities is a fundamental issue of the Walloon Government. The Decree of 15 July 2008 on SAACE meets four key objectives: - the registration of all jobseekers in specific support; - the opportunity to test a full-scale project with minimal risk taking; - the transition from the status of jobseeker to the independent status; - neutralization of the obstacles to the installation as independent. Specifically, S.A.A.C.E. propose to the entrepreneur candidate: - Free coaching and monitoring during maximum twenty-four months for jobseekers wishing to become self-employed or wishing to start their own business; - To test the project before launching on the market once and for all; - To accommodate its activities, the time to confirm the economic viability of the project. If the project proves its viability, the candidate actually adopts the independent status. If, however, the test is inconclusive, the person retains all of its social rights and is offered another orientation to one or more operators training or insertion.

Program Type: Training

Country: Czech Republic

Intervention Code (European Commission): 12

Years: 2004 - 2014

Aim: Enable persons with working limitations to perform suitable self-employment

Actions instrument: The labour office can provide a registered unemployed person with working limitations a contribution for working equipment if such a person starts self-employment. The maximum amount of the contribution is 100 000 Kc. The contribution is subject to a written agreement and in the case that the self-employment is terminated within two years of the date of the the contribution, the labour office can claim back a pro-rata share of the contribution (up to whole amount), depending on the reasons for the termination. The contribution cannot be reclaimed if the termination was caused by medical (health) reasons.

Program Type: Grants

Monitoring Scheme: No

Country: Czech Republic

Intervention Code (European Commission): 13

Years: 2004 - 2014

Aim: Provide job placement for the registered unemployed through self-employment.

Actions instrument: If a registered unemployed person is interested in becoming self- employed with the support of the labour office, he/she should submit to the labour office a business plan with estimated start-up costs. The labour office, following a written agreement, can then provide the unemployed person with either a loan or a contribution. A contribution can cover interest on a loan or other costs connected with self-employment start-up. The maximum amount of contribution per working place is 80 000 Kc.

Agreements can only be signed with registered unemployed and include an obligation for the participant to repay to the labour office a pro-rata part of the contribution in the case that the self-employment is terminated within the specified two years period. This obligation is not applied if the self-employment is terminated due to medical reasons or death of the participant.

Program Type: Grants

Monitoring Scheme: No

Country: Czech Republic

Intervention Code (European Commission): 17

Years: 2004 - 2009

Aim: Provide additional financial support to unemployed persons starting self-employment.

Actions instrument: The measure provides financial support to registered unemployed persons in the beginning period of self-employment. Participants receive a monthly subsidy equivalent to half of the monthly minimum subsistence allowance. The benefit is payable for a maximum of three months.

Program Type: Grants

Monitoring Scheme: No

Country: Czech Republic

Intervention Code (European Commission): 24

Years: 2011 - 2014

Aim: This intervention helps unemployed people who start their own business.

Actions instrument: Overarching contribution is provided to people who have started self-employment according to an agreement with the Labour Office. This agreement is concluded between the Labour Office and registered jobseekers, who cannot find a job by another way due their individual characteristics (long-term unemployment, age, disability, parenthood, etc.). It is provided to persons with some kind of disadvantage on the labour market. The contribution must be requested within 30 days of the conclusion of the agreement. The contribution is specifically designed to cover running costs for a period of five months, with a monthly contribution equals to $0.25 \times$ the average wage in the national economy. The contribution is paid only once (it is a single payment equal to 5×0.25 average wage in the national economy).

Program Type: Grants

Monitoring Scheme: No

Country: Germany

Intervention Code (European Commission): 9

Years: 2004 - 2007

Aim: To encourage self-employment of the unemployed and thus avoid or finish unemployment. To assure subsistence in the beginning of self-employment.

Actions instrument: Level of the benefit. The rate of the allowance is equal to the rate of unemployment benefit or assistance which the claimant had previously received or could have received including social security contributions at a flat rate. The social security contributions are calculated as a proportional surcharge. Duration: The bridging allowance is paid for six months.

Program Type: Grants

Monitoring Scheme: No

Country: Germany

Intervention Code (European Commission): 49

Years: 2004 - 2009

Aim: Creation of additional jobs via support for business start-ups

Actions instrument: Formerly unemployed persons who become self-employed are entitled to a monthly business start-up grant. The grant is paid for one year at a time and is renewable up to a maximum of three years. It amounts to 600 per month in the first year following a period of unemployment, 360 per month in the second year and 240 per month in the third year. In order to receive the benefits, the business starter must demonstrate that he fulfils the necessary conditions. If his earned income exceeds 25 000 per year, the benefit is no longer payable after the end of the initial period. The benefit is not payable if commencement of work on a self-employed basis is supported by bridging assistance pursuant to 57

Program Type: Grants

Monitoring Scheme: No

Country: Germany

Intervention Code (European Commission): 79

Years: 2004 - 2014

Aim: Promotion of self-employment of unemployed

Actions instrument: With the start-up subsidy, business starters can receive a grant amounting to the level of their individual unemployment benefit to cover their living expenses during the period following the start-up (6 months). For that time, a monthly lump sum of 300 EUR can be paid in addition to cover social insurance contributions. In the second phase (9 months) only the monthly lump sum of 300 Euro can be paid. The start-up subsidy is a discretionary benefit of active employment promotion. Before the approval of the second phase, business starters have to provide evidence of their business activities to their local PES agencies. The subsidies can only be paid if

unemployment is ended by taking up self-employment as the main professional activity. A direct transition from an existing employment relationship to self-employment cannot be supported. Only those unemployed are eligible for the subsidy who are still entitled to at least 150 days of unemployment benefit. The granting of support depends on the assessment of a competent body whether the planned start-up is sustainable. In addition, business starters have to prove their knowledge and skills enabling them to take up self-employment. The duration of the entitlement to unemployment benefit is reduced by the number of days for which a start-up subsidy in the amount of the unemployment benefit last paid was granted.

Program Type: Grants

Monitoring Scheme: Yes

Country: Germany

Intervention Code (European Commission): 109

Years: 2009 - 2014

Aim: Individual start-up support and business survival support for self-employed persons in need of assistance and capable of work, in order to overcome or reduce their need for benefits.

Actions instrument: Loans and subsidies for the purchase of materials and equipment necessary and appropriate to take up or exercise a self-employed activity. The subsidies may not exceed the amount of 5,000 Euros. The loans must be earmarked for the specific purpose. Loans and subsidies may be paid out in one single payment or in monthly payments.

Program Type: Microcredit

Country: Germany

Intervention Code (European Commission): 74

Years: 2005 - 2014

Aim: To overcome need for help

Actions instrument: Unemployed able to work can get job finders grant if this is necessary for the integration in the general labour market to take up employment. Job finders grant will be paid at most 24 months if the occupation lasts during this time. The duration of unemployment and the size of the 'Bedarfsgemeinschaft' ('community of need') where the recipient lives are relevant for the assessment of the amount of Job finders grant. The allowance can be paid to those persons, who achieve the conditions of requirement in terms of 7 para. 1 SGB II and are unemployed. The job finders grant in the form of 'combined wages' for (low paid) dependent employment or as allowance to start as self-employed is an independent integration allowance. It can be paid irrespective of the existence of need for help and the granting of unemployment benefit II. Job finders grant can also be paid if the need for help ends with the take up of employment or after

Program Type: Grants

Monitoring Scheme: No

Country: Estonia

Intervention Code (European Commission): 4

Years: 2004 - 2014

Aim: Support business start-ups and creation of additional workplaces

Actions instrument: Unemployed starting their own business are eligible for subsidy for investments in the newly created company. Subsidy is paid as lump-sum and use of subsidy is inspected twice during 12 months - first time 6 months and second time 12 months after subsidy is paid out. The recipient of business start-up subsidy must use it for the intended purpose in adherence to the submitted business plan. The recipient of business start-up subsidy shall return the aid in full if (1) the economic activity prescribed by the business plan has not commenced within six months, unless the person has good reason for not starting the economic activity; 2) the economic activity prescribed by the business plan stops before one year, unless the economic

activity stops for a good reason. The upper limit for business start-up subsidy is established by the state budget for each budget year. Mentoring is an ad hoc service offered to beneficiaries of business start-up subsidy. Mentoring consists of 6 group meetings with the duration of 4-5 hours. The meetings consist of training, discussion, interaction with experienced entrepreneurs, solving practical problems, changing experiences, etc. Mentoring normally lasts for 6 months.

Program Type: Grants

Monitoring Scheme: Yes

Country: Estonia

Intervention Code (European Commission): 32

Years: 2008 - 2014

Aim: To support the implementation of the business plan and sustainability of the start-up by compensating training expenses.

Actions instrument: Expenses for training which is related to the start-up's field of activity are (partly) compensated to the business start-up subsidy recipient. Compensation is available during two year period since the business start-up subsidy is paid out.

Program Type: Grants

Monitoring Scheme: No

Country: Estonia

Intervention Code (European Commission): 33

Years: 2011 - 2014

Aim: To support the implementation of the business plan and sustainability of the start-up by compensating counselling expenses.

Actions instrument: Expenses for individual counselling that is related to the start-up's field of activity are (partly) compensated to the business start-up subsidy recipient. Compensation is available during two year period since the business start-up subsidy is paid out.

Program Type: Grants

Monitoring Scheme: No

Country: Estonia

Intervention Code (European Commission): 34

Years: 2009 - 2014

Aim: To give knowledge and experience of entrepreneurship to new entrepreneurs in order to support the sustainability and competitiveness of the start-up.

Actions instrument: Mentoring consists of 6 sessions, each 4-5 hours. During sessions exercises and problems related to entrepreneurship are solved and discussed with the help of a trainer and mentors.

Program Type: Training

Country: Spain

Intervention Code (European Commission): 20

Years: 2004 - 2014

Aim: To encourage eligible unemployed to become self-employed.

Actions instrument: "Beneficiaries becoming self-employed receive the following assistance: - a lump-sum payment corresponding to 60-80% of the unemployment benefits to which they are entitled; - a quarterly 50% reduction in social security contributions in accordance with the special regulation for self-employed people (or 100% of employee social security contributions) for the duration of the benefits which would have applied had there not been a lump-sum payment (maximum 2 years); - tax exemption up to a given amount."

Program Type: Grants

Monitoring Scheme: No

Country: Spain

Intervention Code (European Commission): 21

Years: 2004 - 2008

Aim: To encourage unemployed people to become self-employed.

Actions instrument: Registered unemployed persons setting up their own business are entitled to the following financial incentives: - Lump-sum payment for subsistence income for persons aged under 25 and for long-term unemployed aged over 25. The amount is doubled when the European Social Fund co-finances the project; - Grants of up to 6% towards interest charged on loans of up to a fixed amount with the aim of facilitating fixed capital formation (there is a ceiling on the amount of the loan); - Grants of up to 100% (by order of the authorities) or 50% (on application) of costs related to viability studies, auditing and consultation.

Program Type: Grants

Monitoring Scheme: No

Country: Spain

Intervention Code (European Commission): 21

Years: 2009 - 2014

Aim: To encourage unemployed people to become self-employed.

Actions instrument: Registered unemployed persons setting up their own business are entitled to the following financial incentives: - Grants of up to 4% towards interest charged on loans to finance investments for creation and implementation of the company.10.000 maximum; - Grants of up to 75% of costs related to viability studies, auditing and consultation. 2.000 maximum; - Grants of up to 75% of costs related to courses on leadership and business management and new technologies.

Program Type: Grants

Monitoring Scheme: No

Country: Spain

Intervention Code (European Commission): 22

Years: 2004 - 2012

Aim: The objective is to help returnees (emigrants who have returned to Spain) to integrate into the labour market.

Actions instrument: Financial support is provided to unemployed returnees to help them create their own enterprise. The amount provided can go up to EUR 4,207 per person according to the feasibility of the project and the amount of the required investment.

Program Type: Grants

Monitoring Scheme: No

Country: Spain

Intervention Code (European Commission): 23

Years: 2004 - 2014

Aim: To encourage employment in co-operatives.

Actions instrument: In order to promote co-operatives, the measure provides the following assistance: - Lump sum payment as subsistence income for persons aged under 25, or for long-term unemployed aged over 25, or for over 45 or unemployed women during >6 months, or for disabled people; - Exceptional assistance as benefit in kind for newly created co-operatives established exclusively for young people aged under 25; - Grants towards interest on loans for investment in fixed capital; - Financial aid for technical assistance of up to 50% of costs or up to 100% if measures are compulsory, especially for viability studies, auditing and consulting (up to a maximum amount); - Financial aid for training activities, promotion and dissemination of social economy that are tied directly to boost the capacity of employment generation in the social economy enterprises of up to 100% of costs (100.000 maximum).

Program Type: Grants

Monitoring Scheme: No

Country: Spain

Intervention Code (European Commission): 24

Years: 2004 - 2014

Aim: To encourage the creation of permanent jobs for unemployed in newly created small and local enterprises involved in innovative activities.

Actions instrument: Newly created small enterprises recruiting unemployed people under an open-ended contract are entitled to the following assistance: - Grants for every worker hired on a full-

time basis under an open-ended employment contract and a proportional share of the grant for every open-ended part-time contract; - An initial grant amounting to a 3% reduction in the interest rate fixed by a public or private creditor for a loan, depending on the number of permanent jobs created; - Financing of part of general management costs up to a maximum amount."

Program Type: Grants

Monitoring Scheme: No

Country: Spain

Intervention Code (European Commission): 25

Years: 2004 - 2008

Aim: To encourage self-employment.

Actions instrument: Unemployed setting up their own business are entitled to the following assistance: - Partial grants towards interest on investment loans of up to 3% of the interest rate (there is a ceiling on the amount of the loan); - Grants for investment in fixed capital up to a given amount; - Technical assistance subsidy; - 50% reduction in their social security contributions for 36 months.

Program Type: Tax Subsidy

Country: Spain

Intervention Code (European Commission): 25

Years: 2009 - 2014

Aim: To encourage self-employment.

Actions instrument: Reductions in their social security contributions: - People involved in RET Autnomos: 30% for 15 months; - Unemployed disabled workers: 50% for 5 years; - Women returning to work after maternity leave: 100%; - Temporary contracts to replace self-employed maternity leave, paternity, adoption or pregnancy risk: 100%.

Program Type: Tax Incentive

Country: Spain

Intervention Code (European Commission): 43

Years: 2004 - 2008

Aim: To encourage unemployed people to become self-employed.

Actions instrument: Registered unemployed persons setting up their own business are entitled to the following financial incentives: - Lump-sum payment for subsistence income for persons aged under 25 and for long-term unemployed aged over 25. The amount is doubled when the European Social Fund co-finances the project; - Grants of up to 6% towards interest charged on loans of up to a fixed amount with the aim of facilitating fixed capital formation (there is a ceiling on the amount of the loan); Grants of up to 100% (by order of the authorities) or 50% (on application) of costs related to viability studies, auditing and consultation.

Program Type: Grants

Monitoring Scheme: No

Country: Spain

Intervention Code (European Commission): 43

Years: 2009 - 2014

Aim: To encourage unemployed people to become self-employed.

Actions instrument: Registered unemployed persons setting up their own business are entitled to the following financial incentives: - Grants of up to 4% towards interest charged on loans to finance investments for creation and implementation of the company. 10.000 maximum; - Grants of up to 75% of costs related to viability studies, auditing and consultation. 2.000 maximum; - Grants of up to 75% of costs related to courses on leadership and business management and new technologies

Program Type: Grants

Monitoring Scheme: No

Country: Spain

Intervention Code (European Commission): 44

Years: 2004 - 2014

Aim: To encourage employment in co-operatives.

Actions instrument: "In order to promote co-operatives, the measure provides the following assistance: - Lump sum payment as subsistence income for persons aged under 25, or for long-term unemployed aged over 25, or for over 45 or unemployed women during >6 months, or for disabled people; - Exceptional assistance as benefit in kind for newly created co-operatives established exclusively for young people aged under 25; - Grants towards interest on loans for investment in fixed capital; - Financial aid for technical assistance of up to 50% of costs or up to 100% if measures are compulsory, especially for viability studies, auditing and consulting (up to a maximum amount); - Financial aid for training activities, promotion and dissemination of social economy that are tied directly to boost the capacity of employment generation in the social economy enterprises of up to 100% of costs. (100.000 maximum).

Program Type: Grants

Monitoring Scheme: No

Country: Spain

Intervention Code (European Commission): 45

Years: 2004 - 2014

Aim: To encourage the creation of permanent jobs for unemployed in newly created small and local enterprises involved in innovative activities.

Actions instrument: Newly created small enterprises recruiting unemployed people under an open-ended contract are entitled to the following assistance: - Grants for every worker hired on a full-time basis under an open-ended employment contract and a proportional share of the grant for every open-ended part-time contract; - An initial grant amounting to a 6% reduction in the interest rate fixed by a public or private creditor for a loan, depending on the number of permanent jobs created; - Financing of part of general management costs up to a maximum amount.

Program Type: Grants

Monitoring Scheme: No

Country: Spain

Intervention Code (European Commission): 46

Years: 2004 - 2014

Aim: To encourage self-employment.

Actions instrument: "Reductions in their social security contributions: - People involved in RET Autonomous: 30% for 15 months; - Unemployed disabled workers: 50% for 5 years; - Women returning to work after maternity leave: 100%; - Temporary contracts to replace self-employed maternity leave, paternity, adoption or pregnancy risk: 100%."

Program Type: Tax Incentive.

Country: Spain

Intervention Code (European Commission): 80

Years: 2012 - 2014

Aim: To encourage unemployed people to become self-employed; To encourage employment in co-operatives.

Actions instrument: Registered unemployed persons setting up their own business are entitled to the following financial incentives: - Grants of up to 4% towards interest charged on loans to finance investments for creation and implementation of the company. 10.000 maximum; - Grants of up to 75% of costs related to viability studies, auditing and consultation. 2.000 maximum; - Grants of up to 75% of costs related to courses on leadership and business management and new technologies; In order to promote co-operatives, the measure provides the following assistance; - Lump sum payment as subsistence income for persons aged under 25, or for long-term unemployed aged over 25, or for over 45 or unemployed women during >6 months, or for disabled people; - Exceptional assistance as benefit in kind for newly created co-operatives established exclusively for young people aged under 25; - Grants towards interest on loans for investment in fixed capital; - Financial aid for technical assistance of up to 50% of costs or up to 100% if measures are compulsory, especially for viability studies, auditing and consulting (up to a maximum amount); - Financial aid for training activities, promotion and dissemination of social economy that are tied directly to boost the capacity of employment generation in the social economy enterprises of up to 100% of costs. (100.000 maximum).

Program Type: Grants

Monitoring Scheme: No

Country: Spain

Intervention Code (European Commission): 82

Years: 2013 - 2014

Aim: To encourage employment in co-operatives.

Actions instrument: In order to promote co-operatives, the measure provides the following assistance: - Lump sum payment as subsistence income for persons aged under 25, or for long-term unemployed aged over 25, or for over 45 or unemployed women during >6 months, or for disabled people; - Exceptional assistance as benefit in kind for newly created co-operatives established exclusively for young people aged under 25; - Grants towards interest on loans for investment in fixed capital; - Financial aid for technical assistance of up to 50% of costs or up to 100% if measures are compulsory, especially for viability studies, auditing and consulting (up to a maximum amount); - Financial aid for training activities, promotion and dissemination of social economy that are tied directly to boost the capacity of employment generation in the social economy enterprises of up to 100% of costs. (100.000 maximum).

Program Type: Grants

Monitoring Scheme: No

Country: Finland

Intervention Code (European Commission): 11

Years: 2004 - 2013

Aim: To encourage the unemployed to start their own business and to promote and increase self-employment and private companies.

Actions instrument: A registered unemployed jobseeker who has a feasible business idea can receive counselling and financial assistance when setting up a new business. Training can be provided during the period of payment of the assistance. The start-up grant is payable over the period that is estimated it will take to get the business started and established (maximum of 18

months). The grant is paid for up to 5 days/week at the same level as the normal employment subsidy increased up to 60%. If the person is working less than 5 days/week in the business, the grant is paid for the actual working days. For the days when people get sickness benefit, the grant will not be paid because the person is not capable to work in the business. Start-up grant will be paid in periods. First period is six months and normally shorter total durations shouldn't be used. Before next period the need and fulfilling of conditions for start-up grant will be evaluated again. Second period can also be six months. After two periods the third period will be paid only if company have employed new workers, it takes longer time than normally to get products or services into the markets, stabilisation of cash flow financing takes time based on other reasons than the person him-/herself, company have a lot of current liabilities based on starting the new business or there exists other case-specific reasons. Need of the new period can be evaluated by a specialist, have the business started as planned and if person can get enough income from the business already. When people start the business they must deliver to the Employment office official tax deduction card, copy of the trade register notification and a copy of articles of association or charter of foundation. The employment office can also ask for intermediate and final reports of starting of the business and to visit the company to make sure that the business has started. The Local Employment and Economic Development Centre can also ask for expert reports to make sure that the eligibility criteria will be fulfilled in the individual enterprise.

Program Type: Grants

Monitoring Scheme: Yes

Country: Finland

Intervention Code (European Commission): 55

Years: 2005 - 2014

Aim: To encourage employed at risk, inactive and students to start their own business and to promote and increase self-employment and private companies.

Actions instrument: People with a feasible business idea can receive counselling and financial assistance when setting up a new business. Training can be provided during the period of payment

of the assistance. The start-up grant is payable over the period that it is estimated it will take to get the business started and established, for a maximum of 18 months. The grant is paid for up to 5 days/week at the same level as the normal employment subsidy increased up to 60%. If the person is working less than 5 days/week in the business, the grant is paid for the actual working days (when the person gets sickness benefit, the grant is not paid because the person is not capable to work in the business). Start-up grant will be payed in periods. First period is six months and normally shorter total durations shouldn't be used. Before next period the need and fulfilling of conditions for start-up grant will be evaluated again. Second period can also be six months. After two periods the third period will be paid only if company have employed new workers, it takes longer time than normally to get products or services into the markets, stabilation of cash flow financing takes time based on other reasons than the person him-/herself, company have a lot of current liabilities based on starting the new business or there exits other case-specific reasons. Need of the new period can be evaluated by a specialist, have the business started as planned and if person can get enough income from the business already. When people start a business they must deliver to the Employment office: an official tax deduction card, a copy of the trade register notification and a copy of articles of association or charter of foundation. Employment office can also ask for intermediate and final reports of starting of the business and visit the company to make sure that the business started. The Local Employment and Economic Development Centre have also appropriations to ask expert reports on the eligibility criteria to be fulfilled by the individual enterprise. This measure is a successor of FI-11 (Start-up grant) where the grant is paid to unemployed jobseekers. In FI-55, the target groups are different (but the intervention is based on the same regulations).

Program Type: Grants

Monitoring Scheme: Yes

Country: France

Intervention Code (European Commission): 38

Years: 2004 - 2014

Aim: To help jobseekers to start/take over a company, or to take up a non-salaried profession.

Actions instrument: The aid for the unemployed setting-up or rescuing a company (ACCRES) consists of a social contributions' exemption for 1 year (up to 120% of the minimum wage). The amount of revenue forgone by the social security regimes is not completely known. Social benefit payments can be maintained during 1 year for the ASS beneficiaries (FR-3), the beneficiaries of the widows' allowance and the beneficiaries of the ATA (FR-89) under certain conditions. Since 2005, the duration of exemption is increased (up to 24 months) if the enterprise is a "micro enterprise". The exemption is total or partial depending on the level of the remuneration of the beneficiary. Since 2006, unemployed receiving unemployment benefits (FR-1) can benefit from a support to set up or rescue an enterprise (corresponding to half of the remaining allowances at the time of the creation of the new enterprise, or they can cumulate partially their remaining unemployment benefits and income from the new activity during a maximum of 15 months. Since 2009, new support measures for business start-up (NACRE - Nouvelles aides à la création d'entreprise) is launched. They complete and reinforce the interventions helping unemployed setting-up or rescuing a company. They include Consultancy cheque-books (old FR-38bis) and Support for new business development (FR-59). NACRE allows people in unemployment or facing difficulties to integrate the labour market to create or take over an enterprise by benefiting from a specific assistance over time: before its creation to prepare the project (including the financing) and after in the start-up and development phase (up to 3 years in total).

Program Type: Tax Incentive

Country: France

Intervention Code (European Commission): 59

Years: 2004 - 2009

Aim: To help jobseekers and unemployed aged 50 and over to create or restart a company, or to take up a non-salaried profession.

Actions instrument: This scheme encouraging the development of new companies (EDEN - encouragement au développement d'entreprises nouvelles) grants reimbursable advances (interest free loans financed by the State) over a period of up to 5 years, with a maximum 18 months deferral for repayment, and offers support over 3 years. The amount of the advance is subject to a maximum

of 6,098 and the recipient must be able to demonstrate complementary financing of at least 50% of the advance. The EDEN support is not paid anymore since 01.01.2009. It is now included under the new support measures for business start-up (NACRE - nouvelles aides la creation d'entreprise) which is integrated in FR-38 (ACCRE).

Program Type: Microcredit

Country: France

Intervention Code (European Commission): 121

Years: 2006 - 2014

Aim: To help unemployment benefit recipients to create their own business.

Actions instrument: Unemployed persons receiving unemployment benefits (FR-1) and a support for setting or rescuing a company (FR-38 - ACCRE) can benefit from this intervention (ARCE). The amount corresponds to 50% of the remaining claims when starting the activity. The support is paid as follows: - 1st payment when starting the activity, when the beneficiary justifies eligibility. - 2nd payment 6 months later, provided that the activity is ongoing. The support must be declared as ""treatments and wages"" and is therefore subject to personal income tax.

Program Type: Grants

Monitoring Scheme: Yes

Country: France

Intervention Code (European Commission): 122

Years: 2009 - 2014

Aim: To help unemployed people or those facing difficulties in terms of sustainable labour market integration to create or rescue a company by providing them a long-term support.

Actions instrument: This intervention proposes an intensive assistance of at least 3 years: phase 1: support to finalize the company creation/rescuing project (maximum 6 months). phase 2: systematic assistance to establish quality relationship with banks (maximum 6 months) in order to obtain a zero rate loan as well as an additional bank loan. phase 3: post-creation support extending over 3 years after the set up of rescue of the company, in order to help the new manager in terms of management choices and promoting the development of the company. In order to guarantee zero rate loans, the State endorses a guarantee fund from the Social cohesion fund.

Program Type: Training

Country: Hungary

Intervention Code (European Commission): 16

Years: 2004 - 2014

Aim: Support the unemployed in starting up a new enterprise or joining an existing one.

Actions instrument: Any person may apply for the following assistance to start entrepreneurial activities: a) upon presenting an official certificate for entrepreneurial activity, for drawing aid in the amount of unemployment benefits for six additional months maximum; b) compensation for not more than 50% of the costs of professional consultation as recommended by the employment center, and used with the certificate in proof of entrepreneurial activities; c) compensation for maximum 50% of the costs of training courses necessary for pursuing entrepreneurial activities; d) if taking out a loan, compensation for not more than 50% of the costs of collateral insurance, for a period not exceeding one year; e) non-repayable direct assistance and/or repayable assistance for a maximum sum of HUF 3 M; f) subsidy of 100% of minimum wage even if the participant receives unemployment/job-seekers' benefits (maximum duration is 6 months). Support provided to disabled persons (maximum duration is 12 months): - the lowest level of unemployment benefit for 12 months - total training costs."

Program Type: Grants

Monitoring Scheme: No

Country: Hungary

Intervention Code (European Commission): 17

Years: 2004 - 2014

Aim: Subsidies may be granted to unemployed persons who are becoming self-employed.

Actions instrument: On the basis of tender procedures: - up to 3 M HUF capital advanced on 20% own financial source (expenses duration is 5 years after one year tolerance duration in equal parts by months), and; - reimbursement of counselling costs for starting up.

Program Type: Grants

Monitoring Scheme: No

Country: Ireland

Intervention Code (European Commission): 3

Years: 2004 - 2014

Aim: To encourage people on social protection payments to take up self-employment

Actions instrument: Participants in the scheme will receive support as follows (including increases for a qualified adult and child dependent allowances): - 100% of their weekly social welfare payment for the first year; - 75% for the second year; Persons receiving BWEA may also retain any secondary benefits (e.g. fuel allowances) for the 2 years provided that the combined household income from the self-employment and BWEA is less than a certain threshold.

Program Type: Grants

Monitoring Scheme: No

Country: Italy

Intervention Code (European Commission): 19

Years: 2004 - 2014

Aim: To encourage self-employment of unemployed.

Actions instrument: Participants, who wish to set up a one-person business, have access to a training course for a period of 4 months (non remunerated) during which the feasibility of their project is assessed. If their project is reckoned to be economically and technically feasible, participants can benefit from: a) a subsidy of up to 15,000 for purchasing equipment; b) a loan of up to 10,000 to be reimbursed in 5 years; c) a subsidy of up to 5,000 for current cost during the first year of activity; d) a tutoring service. Law Decree n. 185/2000 provides for financial aid (non repayable grants and soft loans) and technical assistance for three types of initiatives: - self employment (in the form of sole proprietorships), with total investments envisaged of up to euro 25,8; - microenterprises (in the form of partnerships or companies), with total investment envisaged of up to euro 129,1; - franchising (in the form of sole proprietorships, partnerships or companies), to be carried out with franchisors accredited with Invitalia (National agency for inward investment promotion and enterprise development).

Program Type: Grants

Monitoring Scheme: No

Country: Italy

Intervention Code (European Commission): 65

Years: 2004 - 2006

Aim: To encourage the creation of new businesses in handcraft and trade sectors.

Actions instrument: Eligible persons can benefit for the 3 years following the creation of a registered new business in the handcraft and trade sectors of a reduction of 50% in social contributions.

Program Type: Tax Incentive

Country: Italy

Intervention Code (European Commission): 115

Years: 2006 – 2009

Aim: Creating self-employment or business start-up opportunities

Actions instrument: Training activities for young people and adults seeking their first job or a new job, with the aim of creating self-employment or business start-up opportunities. Measures of this type are often preceded or followed by other activities (of preliminary training or support and coaching in starting self-employment or setting up a business). In order to fit into this category the training activity must be given precedence over the other forms of intervention.

Program Type: Training

Country: Italy

Intervention Code (European Commission): 116

Years: 2006 - 2009

Aim: Encouraging starting self-employment or setting up a business as a means of job creation.

Actions instrument: Economic incentives intended for young people and adults seeking their first job or a new job, to provide financial support for starting self-employment or setting up a business. New areas of employment such as the social economy and local development represent the priority areas for intervention for this type of measure.

Program Type: Grants

Monitoring Scheme: No

Country: Italy

Intervention Code (European Commission): 117

Years: 2006 - 2009

Aim: Incentives for self-employment and business start-ups as a means of job creation

Actions instrument: Activities geared towards creating a path of overall support for the creation of new jobs. This path is implemented in successive stages linked to four priority components: 1) partnership: - definition, in a manner that can be officially documented, of forms of collaboration between the main players and other parties at the planning and implementation stages (agreements, memoranda of understanding, etc); 2) preliminary training: - measures to prepare for the integration process (e.g. socialisation, awareness-raising, etc.); - initial support activities (such as guidance, analysis of individual needs, updating of basic skills, etc); 3) training: - training for job creation; - support for job creation; - forms of individual assistance for becoming self-employed or setting up a business (e.g. coaching, advice); - economic incentives to become self-employed or set up a business. In order for a measure to be included in this category at least the last three stages described above should be planned and implemented.

Program Type: Training

Country: Italy

Intervention Code (European Commission): 145

Years: 2007 - 2014

Aim: Creating self-employment or business start-up opportunities

Actions instrument: Training activities for young people and adults seeking their first job or a new job, with the aim of creating self-employment or business start-up opportunities. Measures of this type are often preceded or followed by other activities (of preliminary training or support and coaching in starting self-employment or setting up a business). In order to fit into this category the training activity must be given precedence over the other forms of intervention.

Program Type: Training

Country: Italy

Intervention Code (European Commission): 146

Years: 2007 - 2014

Aim: Encouraging starting self-employment or setting up a business as a means of job creation.

Actions instrument: Economic incentives intended for young people and adults seeking their first job or a new job, to provide financial support for starting self-employment or setting up a business. New areas of employment such as the social economy and local development represent the priority areas for intervention for this type of measure.

Program Type: Grants

Monitoring Scheme: No

Country: Italy

Intervention Code (European Commission): 147

Years: 2007 - 2014

Aim: Incentives for self-employment and business start-ups as a means of job creation

Actions instrument: Activities geared towards creating a path of overall support for the creation of new jobs. This path is implemented in successive stages linked to four priority components: 1) partnership: - definition, in a manner that can be officially documented, of forms of collaboration between the main players and other parties at the planning and implementation stages (agreements, memoranda of understanding, etc); 2) preliminary training: - measures to prepare for the integration process (e.g. socialisation, awareness-raising, etc.); - initial support activities (such as guidance, analysis of individual needs, updating of basic skills, etc); 3) training: - training for job creation; - support for job creation; - forms of individual assistance for becoming self-employed or setting up a business (e.g. coaching, advice); - economic incentives to become self-employed or set up a business. In order for a measure to be included in this category at least the last three stages described above should be planned and implemented.

Program Type: Grants

Monitoring Scheme: No

Country: Italy

Intervention Code (European Commission): 158

Years: 2012 - 2014

Aim: Promote reinsertion in the labour market of Managers over 50.

Actions instrument: Activities for the reintegration of high professionalism through the implementation of integrated services. Provides bonuses for self-employment, for hiring and incentives for self-employment

Program Type: Grants.

Monitoring Scheme: No.

Country: Norway

Intervention Code (European Commission): 25

Years: 2004 - 2014

Aim: To encourage unemployed persons to become self-employed

Actions instrument: During the period of planning and implementation of their own business, participants have to be registered as jobseekers at NAV (the Norwegian Labour and Welfare service) and continue to receive unemployment benefit. The participants receive no additional benefits from NAV, but they usually receive a grant in order to start their own business from the ""Norwegian industrial and regional development fund"". However, they are not sanctioned from receiving unemployment benefit if they refuse to take a job offered by NAV. The application contains a business plan where the applicant has to convince NAV that the business is sustainable in the long term. NAV will not give any financial support other than the prolongation of the unemployment benefit, which can last for a maximum of 9 months.

Program Type: Grants.

Monitoring Scheme: No.

Country: Poland

Intervention Code (European Commission): 5

Years: 2005 - 2014

Aim: To facilitate the integration of the disabled persons into the labour market by creating conditions favorable to self-employment.

Actions instrument: Disabled persons may receive a loan for starting a business activity in or outside agriculture in the amount not exceeding thirty-fold average monthly remuneration. The contract with the beneficiary lays down the terms of granting and re-payment of the loan as well as the interest rate. The loan can be remitted up to the level of 50%, under the condition of running a business during a period of at least 24 months and after meeting other requirements of the agreement. In case of a difficult material or life situation of the debtor, the date of loan re-payment can be deferred or the payment can be remitted in part or in whole. Disabled persons running a business or a farm (own or rented) may receive from Fund's co-financing in an amount up to the 50% of interest on bank credit taken up for continuation of business, if s/he has not taken advantage of the loan for starting a business activity or if such loan has been re-paid or remitted in whole. Co-financing shall take place on a basis of an agreement signed by the local government authority.

Program Type: Microcredit

Country: Poland

Intervention Code (European Commission): 19

Years: 2005 - 2014

Aim: To provide help and assistance in starting economic activity by the unemployed and dismissed farmers.

Actions instrument: An allowance for starting economic activity covering the costs of legal assistance, consultations and guidance in starting this activity. The unemployed person may be granted an allowance in the amount defined in the contract, however not exceeding 600% of the average salary. In the case that activity is started under the principles defined for social cooperatives in the understanding of the provisions of cooperative law, an allowance granted to the unemployed person may not exceed 400% of the average salary per one founding member of the cooperative, and 300% of the average salary per one member joining the cooperative after its establishment. If a person who received the allowance was running the enterprise for a period

shorter than 12 months or who joined the cooperative and was its member for a period shorter than 12 months has to return the received financial means with the interests. This rule applies to the situation of contravention of any other conditions of the contract.

Program Type: Grants

Monitoring Scheme: Yes

Country: Sweden

Intervention Code (European Commission): 9

Years: 2004 - 2014

Aim: To promote job-creation in the form of self-employment and business start-ups as an alternative to unemployment

Actions instrument: Jobless people wishing to start their own business can obtain financial support from the Employment Service. The grant is intended to help cover living costs during the start-up phase. A start-up grant can be provided for up to six months if the business venture concerned is expected to return an adequate profit and provide the jobless individual with permanent employment. The individual must present a business idea and a financial plan that are approved by consultants retained by the Employment Service for assessments of this kind. Disabled persons entitled to start-up grants for the disabled can combine them with this grant. There are also some payments for consultants providing services such as information meetings, evaluation of business ideas, etc. The grant can, in special circumstances, be extended for a further six months.

Program Type: Grants

Monitoring Scheme: Yes

Country: Sweden

Intervention Code (European Commission): 69

Years: 2004 - 2014

Aim: To facilitate the employment of disabled persons through supporting their ambitions to start their own business.

Actions instrument: Grants to disabled entrepreneurs are for acquisition of machines or tools, or other costs for starting a business. Financial support can be granted to disabled entrepreneurs, unable to find a suitable work on the regular labour market.

Program Type: Grants

Monitoring Scheme: No

Country: Sweden

Intervention Code (European Commission): 70

Years: 2007 - 2014

Aim: The Job and development program is directed towards unemployed person who have been without a regular job for a very long period of time. The Job and development program is intended to break the vicious circle between labour market policy programmes and unemployment benefit. The Program shall involve individually designed activities aiming at job-placement as soon as possible. The Job and development program started in July 2007 and is intended to gradually replace the Activity Guarante (SE 42)

Actions instrument: "The Job and development program may consist of three phases of measures. The first two phases involve individually designed activities aiming to increase the prerequisites to find a job 1: Assessment, job-search activities, coaching and preparatory measures; 2: Work Experience, Job-testing and extended occupationally rehabilitation; Both phases may also include preparatory and vocational training. Persons who have participated in activities 1 and 2 with compensation in the form of activity support for a maximum period of 450 without being able to find a job shall be referred to the third phase. 3: More lasting employment in special form.

Program Type: Grants

Monitoring Scheme: No

Country: Slovenia

Intervention Code (European Commission): 17

Years: 2005 - 2006

Aim: Obtaining basic information on the possibility of self-employment, on procedures, implementing various workshops for preparing the employment plan.

Actions instrument: The measure is implemented as help in self-employment [implemented by the Public Agency for Entrepreneurship and Foreign Investments with subcontractors] in the form of the voucher system of counselling.

Program Type: Training

Country: Slovenia

Intervention Code (European Commission): 65

Years: 2008 - 2014

Aim: Preparation of persons from the target group for self-employment via assessment of their business ideas and workshops of training for entrepreneurship.

Actions instrument: Assistance in self-employment is implemented via assessment of their business ideas and a three-day workshop ""Preparation for self-employment"", at which basic information is given regarding entrepreneurship, business idea, business plan, legal aspects of operation, registration procedures, market research and marketing, and the basics of accounting

and bookkeeping. Eligible costs for unemployed persons include transportation cost for the workshop, while eligible cost for the external interviews and workshops is account for the service done.

Program Type: Training

Country: Slovenia

Intervention Code (European Commission): 88

Years: 2010 - 2011

Aim: The objective of this measure is to promote self-employment in companies that would like part of their activities to transfer to workers who will self-employed in start-up (new) business entities and will generate its revenue primarily by finding work in new markets, beyond the company's activities, where they were employed. These persons are self-employed for full-time (40 hours / week), except people with disabilities who are self-employed in accordance with the issued decision on disability.

Actions instrument: Applicants must with their program, when registering at a public tender, demonstrate that they have difficulties in business operations as a result of the general financial crisis.

Program Type: Grants

Monitoring Scheme: No

Country: Slovenia

Intervention Code (European Commission): 93

Years: 2010 - 2013

Aim: The program aim is to create new employment opportunities through promoting entrepreneurship in the form of subsidies for self-employment of persons from the target groups. The aim is to preserve the continuity of self-employment for a minimum period of one year.

Actions instrument: On the basis of a certificate of attendance at the workshop and complete and appropriate application ESS decides whether chosen person is right for the mentioned activity. If the answer is yes than the contract is signed, which grants subsidy for self-employment (the loan is 4.500 EUR and is paid in a lump sum; within the period specified in the contract).

Program Type: Microcredit

Country: Slovenia

Intervention Code (European Commission): 101

Years: 2011 - 2014

Aim: The program aim is to create new employment opportunities through promoting entrepreneurship in the form of subsidies for self-employment of persons from the target groups. The aim is to preserve the continuity of self-employment for a minimum period of one year.

Actions instrument: On the basis of a certificate of attendance at the workshop and complete and appropriate application ESS decides whether chosen person is right for the mentioned activity. If the answer is yes than the contract is signed, which grants subsidy for self-employment (the loan is 4.500 EUR and is paid in a lump sum with in the period specified in the contract).

Program Type: Microcredit

Country: Slovenia

Intervention Code (European Commission): 112

Years: 2013 - 2014

Aim: The operation Enterprisingly into the business world is aimed at promoting entrepreneurship among young unemployed people with higher education levels and at promoting job creation.

The basic idea of the operation is to provide to participants, selected through a public call, all the professional assistance and training they need to develop their business idea into a working business.

Actions instrument: The project is implemented in groups of ten participants and lasts five months, during which the participants are employed in one of the participating regional development agencies, mentors help them develop their business idea, they write a business plan and are trained to undertake an entrepreneurial career or to enhance their employability. The objective of each participant is to set up a company, become self-employed or employed by another employer within one year after the completion of the training.

Program Type: Training

Country: Slovakia

Intervention Code (European Commission): 5

Years: 2004 - 2014

Aim: Job seekers incentive to start doing business.

Actions instrument: The contribution to self-employment may be granted by written request of the job seeker who has been on file for at least three months in the register of job seekers, providing that she/he will commence, and continue performing self-employing activities for at least three years. The contribution to self-employment may be granted to cover documented expenses in link with self-employing activities and it is derived from the amount of the total price of labour calculated from the average gross wage of an employee in the Slovak Republic s economy for the first till the third quarters of previous calendar year. The sum of the contribution depends on the average of unemployment rate in the relevant district. The contribution shall be granted by the Labour Office of territorial competence at the place of creation of the self-employment job.

Concluding the agreement on the contribution shall be contingent upon completion, by the job seeker, of preparatory courses organized by the Office for his/her self-employment operation or performance, and upon submission of a business plan by the job seeker, including the estimated costs of commencing the operation or performance of his/her self-employment activities.

Program Type: Grants

Monitoring Scheme: No

Country: Slovakia

Intervention Code (European Commission): 11

Years: 2004 - 2014

Aim: Increase of created workplaces number for self-employment of disabled citizens.

Actions instrument: The disabled citizen commencing the operation or performance of self-employment in a protected workshop or at a protected workplace shall, by his/her written request, be granted a contribution for commencing the operation or performance of self-employment in a protected workshop or at a protected workplace. The contribution shall be granted to the disabled citizen who has been filed for three months in the register of job seekers, who will commence, and continue without interruption for at least two years, operating or performing self-employment in a protected workshop or at a protected workplace. The contribution per job generated in the sheltered workshop or sheltered workplace shall be share of the amount of the total price of labour calculated from the average wage of an employee in the Slovak Republic s economy for the first till the third quarters of previous calendar year. The amount and duration of providing of the contribution shall depend on the type of region eligible for the provision of the State aid and the average rate of registered unemployment of the district and on the legal status and the subject of business of the employer.

Program Type: Grants.

Monitoring Scheme: No.