The Inter-American Development Bank (IDB), the South American Network on Applied Economics/Red Sur[1] open a call for research proposals (CfP) on "Obstacles to innovation in Latin America and the Caribbean".

Although most CTI policy frameworks in the region recognize the presence of different market failures that might hinder innovation, surprisingly little progress has been made to analyze the impacts of these failures and address them in practice. The objective of this CfP is to move one step forward in this direction by trying to understand whether specific innovation obstacles are important drivers of the low levels of innovation propensity and intensity in LAC firms. The findings of this research would provide valuable insights to feedback innovation policy action in the region.

Most CTI policies that are currently being implemented in the region focus on financial instruments and matching grants (which address a specific type of market failure). Available evaluations suggest that innovation policies in LAC have had positive impacts in terms of the intensity of innovation activities and outputs of the grantees. However, in spite of these impacts, it is the case that the region as a whole still has a very weak performance in terms of the number of companies that achieve positions of technological and market leadership on a regional and/or global scale. This points out to the existence of other failures that might be present, or that interact with financial failures, and that are not being properly internalized into the policy mix. Case studies commissioned under this call will aim at identifying these failures and suggesting changes in the CTI policy framework in order to address them.

Four research projects (see the list of eligible countries below) will be funded to the value of up to USD 20.000 each, over a period of 7 months (from May until November, 2017).

For inquiries concerning the content of this Call please contact Red Sur's coordination office at coordinacion@redmercosur.org. **Submission deadline is March 15, 2017 at 23.59 hs.** (Montevideo, Uruguay, GMT -3), with the subject line: *CfP Obstacles to Innovation in LAC.*

[1]**RED SUR (Red Sudamericana de Economía Aplicada)** is an independent research network of institutions with the support of the **International Development Research Centre (IDRC, Canada)**, for more information see: http://www.redsudamericana.org/

1. BACKGROUND

The literature analyzing the factors that hamper firm innovation has mostly focused on financing constraints (for a review see Schiantarelli, 1996; Hall, 2002; Bond et al., 1999; and Hottenrott and Peters, 2012). In particular, they all focus on the high uncertainty, information asymmetries and market complexity specifically linked to the financial returns of R&D investments and the ability to attract external funds. Most studies test the presence of financing constraints indirectly by looking at the sensitivity of R&D investments to changes in cash flows, as in Hall (2008).

Other studies (Canepa and Stoneman, 2007; Savignac, 2008; Hottenrott and Peters, 2012, Alvarez and Crespi, 2015) employ innovation surveys providing direct information on the perception of financing constraints by firms. Empirical findings tend to confirm that financial constraints significantly lower the likelihood of firms to engage in innovative activities (Savignac, 2008) and this pattern is more pronounced in small firms and high-tech sectors (Canepa and Stoneman, 2007). Hottenrott and Peters (2012) find that firms with higher innovation capabilities are more likely to face financing constraints, holding equal internal availability of funds. More recently, an increasing number of contributions have relied on the use of innovation surveys to assess the relationship between the degree of engagement in innovation activities (input) and the perception of financial and non-financial constraints.

The data provided by innovation surveys allows enlarging the analysis on the role of obstacles in two main directions. First, it provides a direct indicator on the perception of obstacles to innovation, which goes beyond the financial obstacles only. This includes perception of knowledge and information-related barriers, market structure, demand and regulation obstacles. Second, it allows investigating whether this whole range of barriers affect firms' behavior at different stages of the innovation cycle, whether on the decision to innovate, the engagement in innovation activities (which go beyond the traditional R&D expenditures) and the successful introduction of a new product/process.

Innovation survey-based literature in this field has also explored various issues of complementarities between different innovation obstacles (Galia and Legros 2004; Mohnen and Röller, 2005); the links between factors affecting the perception of the importance of different barriers to innovation (Baldwin and Lin, 2002; Iammarino et al., 2009; D'Este et al., 2012); and the impact of (mainly financial) obstacles to innovation (Tourigny and Le, 2004; Savignac, 2008; Tiwari et al., 2008; Mancusi and Vezzulli, 2010; Blanchard et al., 2013).

Two key methodological issues that studies of this type face are worth mentioning here. First of all, most of the empirical findings converge in pointing to a positive relationship between engagement in innovation and perception of barriers. In trying to make sense of this counterintuitive evidence, Savignac (2008) and D'Este et al. (2008) identify sources of potential bias, which explain the positive spurious correlation between innovation intensity and perception of obstacles and the counter-intuitive results emerging from these analyses. These sources of bias include the usual ones - such as the presence of heterogeneous unobserved firms' specific factors or the simultaneity of the status of spending for innovation projects and facing obstacles to innovation. Also, a specific source of bias is linked to an inappropriate selection of the relevant sample for the analysis, which does not distinguish between firms willing and not willing (or needing) to innovate, as suggested by Savignac (2008) and D'Este et al. (2008, 2012). Building on their work, subsequent contributions have therefore carefully selected the relevant sample (of firms willing to innovate and potentially failed by the presence of obstacles) and obtained expected signs (Mancusi and Vezzulli, 2010; Blanchard et al., 2013, Alvarez and Crespi, 2015).

Secondly, also within the innovation surveys-based literature, an overwhelming number of contributions focus on financing constraints to innovation, treating the role of non-financial ones as a simple control factor (Tiwari et al., 2008; Mancusi and Vezzulli, 2010; Blanchard et al., 2013).

Despite recognizing the fundamental –possibly exacerbating– role of other types of obstacles indirectly on the financing ones and directly on the innovation intensity of firms, none of these contributions choose to provide a detail picture of other systemic sources of innovation failure. However, there are exceptions to this pattern.

Using four waves of the UK CIS, Pellegrino and Savona (2013) find that demand- and market-related factors are as important as financing conditions in determining firms' innovation failures. This evidence puts much of the latest hype on finance in perspective and brings back into the picture traditional demand and market structure arguments of why firms fail to innovate. While Coad, Pellegrino and Savona (2016) for example, analyze the effect of financial, knowledge, demand, market structure, and regulation barriers to innovation on firms' economic performance in the UK. Employing both quantile regression techniques and propensity score matching they find evidence that financial obstacles negatively affect productivity across the whole distribution. The lack of qualified personnel' only affected low productivity firms. Regarding demand or market structure barriers the authors did not find any significant effect on productivity.

García-Quevedo, Pellegrino and Savona (2016) find that while the perception of a lack of demand has a negative impact on the amount and the likelihood of firms to engage in R&D activities, demand uncertainty seems, on the contrary, to represent an incentive to spend more in R&D, although only in low-tech sectors. This suggests that the impact of potential barriers may vary according to the specific phase of the cycle in which innovation decisions are taken. In a recent paper published in the IDB IFD/CTI Flagship, Crespi, Olivari and Vargas (2016), using Chilean and Uruguayan data find that the effect of the costs category on firm innovation propensity is higher than the other obstacle categories, and tend to affect equally firms in the manufacturing and service sectors. Differences are found on the effects of knowledge barriers, which seem to affect only firms in the service sector. Market barriers also seem to decrease firms' innovation propensity, although the effect is lower than the one of financial constraints. Pellegrino and Savona (2016) analyze the effect of different barriers working with a filtered panel of "potential innovators". They find that demand-side factors, particularly a concentrated market structure and the lack of demand, are as important as financial constraints.

As for the policy implications of the existence of different barriers, Antonioli, Marzucchi and Savona (2017) analyze the relationship between the perception of barriers to innovation and the firm's propensity to cooperate to mitigate their effect. They find that having to face a single, specific constraint fosters cooperation with research organization and other firms. However, having to cope with different barriers is a deterrent to establishing cooperation agreements.

This CfP is expected to contribute to the literature in two ways. First, by applying a systemic approach to innovation barriers it will include a wider range of obstacles that can prevent firms from innovating, making sure to correct for the methodological issues that are typically faced by this type of analyses. This will contribute to the scant available empirical evidence in the field. Second, it will generate evidence for Latin America, a region that has been mostly absent from the analysis and that due its own specificities should generate its own empirical evidence and related policy implications.

2. OBJECTIVE AND RESEARCH QUESTIONS

Objective: The main focus of this CfP is to increase understanding on the obstacles to innovation in LAC, with a special focus on the role of public policy.

Following the methodology summarized in Section 3, **case studies must answer at least the following research questions:**

1. What are the main obstacles to innovation investments in LAC? Do obstacles to innovation affect differently firm's innovation propensity and innovation intensity?
2. How do these obstacles affect the different classes of innovation investments? (R&D, training, equipment, etc.).

3. How do they vary according to the type of innovator (low productivity vs high productivity firm, small vs large firm, start-up vs. established firm, low-tech vs. high-tech sectors)?
4. Are there complementarities between obstacles to innovation? If so, what are the implications for the innovation policy mix? Do firms engage in cooperation with other firms and organizations to relieve the effects of innovation barriers?

Besides the above described quantitative analysis, the research projects should include a qualitative analysis based on interviews at the firm level and/or focus groups with firms that undertook successful innovation projects. This complement should contribute to illustrate how the different barriers to innovation operate in practice and how companies attempt to manage them. In particular, the qualitative analysis should highlight the role of barriers within firms (internal ones) that hinder innovation activities (e.g. lack of capabilities for elaborating projects attractive for potential investors, organizational rigidities and/or lack of incentives that prevent the flow of ideas within the organization, the prevalence of short-term goals, etc.). While those barriers are not always covered by innovation surveys, nonetheless they may be very relevant for understanding the amount, pace and patterns of innovation activities in the region.

3. METHODOLOGY AND DATA

The research should rely on national innovation surveys or similar data. Over the last decade the IDB has supported innovation surveys in several LAC countries. These surveys are adapted from the OECD's OSLO Manual, and are comparable among the different countries. One particular section collects information on the most important obstacles that a firm faces regarding innovation investments (usually reported through Likert scales, which includes a component of subjectivity to the response). Although the actual list of included obstacles varies across countries, in general terms they can be grouped into four categories: (a) financial (i.e. lack of own funding, low expected returns, lack of external funding, etc.), (b) market constraints (i.e. barriers to competition, poor regulation, uncertainty regarding demand of innovation, etc.), (c) appropriability (i.e. innovation is easy to copy or poor IPR system), and (d) access to knowledge (lack of highly skilled workforce, lack of information on technologies, collaboration difficulties with other agents, etc.).

Following the recent and emerging literature on the impacts of innovation obstacles on innovation decisions it is possible to explore at least three different identification strategies to deal with the methodological issue described earlier:
(1) First, it is possible to filter out those firms that are not interested in innovation and work only with a sub-sample of "potential innovators" to correct for endogeneity and avoid biased estimators (see Pellegrino and Savona, 2016).
(2) Second, plausibly exogenous instrumental variables exist –for example, the presence of collateral as a proxy for financial obstacles– that can allow for causality identification.
(3) Third, it is possible to take advantage of the multiple waves of innovation surveys and use firm fixed effects to control for unobserved, time invariant heterogeneity across firms (innovation surveys provide information on both obstacles and innovation investment variables), which can generate a potential problem of endogeneity by construction as both sets of variables will be subject to the same respondent bias.

One empirical way of controlling for this is by using company fixed effects on a panel setting (Bertrand and Mullainathan, 2001). Another way is using the methodology described in Crespi *et al*. (2006). Panel data with continuous and discrete dependent variable econometric techniques should be used to assess the impacts of obstacles on innovation propensity, innovation investment, innovation outcomes and labor productivity. With the estimated coefficients several simulations could be run to explore how much innovation investment, outcomes and productivity is lost due to the different obstacles. Impacts should be also assessed according to the technological intensity of the company sector, the size of the firm and the firm relative productivity.

Finally, interactions among the different obstacles will be explored to identify for the presence of complementarities among different failures.

Information needed for these case studies is contained in the different innovation surveys collected in several countries in the region over the last years.

4. RESEARCH OUTPUTS

The findings of the selected papers are expected to provide valuable insights to feedback innovation policy action in LAC. The best papers will be published as IDB Working Papers, and their main conclusions and policy recommendations will be part of a Policy Brief containing policy recommendations to address the main obstacles that are hindering private innovation efforts in Latin America and the Caribbean. This policy Brief will be published as a joint IDB-RED SUR publication.

5. ELIGIBLE COUNTRIES

Eligible countries for this Call are IDB LAC member countries that have experience with OECD Oslo Manual-based national innovation surveys and where the micro data for these surveys can be made accessible to domestic researchers.

6. SELECTION OF PROPOSALS

The selection will be carried by a panel formed by the Project Team leaders at the IDB, Red Sur and an external Scientific Advisor. The selection process will be finalized by the first week of April.

7. FUNDING

The funding for each research project is USD 20.000. This includes all research costs.

In addition, IDB will cover the costs (travel and accommodation) for one member of the research team to two technical workshops. Each proposal should detail in a separated document travel and accommodation costs based on the following assumptions:

(1) Attendance to an inception meeting by the end of April 2017 in Washington DC, where the research proposals will be presented and discussed with the Team Leaders, the Scientific Advisor and other participants of the IDB and RED SUR; and,

(2) Attendance to a final-workshop to be held in the second week of November to discuss the main findings of each paper. The second workshop will take place in Montevideo together with the 2017 MEIDE conference.

8. PROPOSAL CONTENT

In order to participate in this Call, **a research institution or individual researcher should submit a proposal** including:

1. A Summary (half a page).
2. A justification and analysis of the proposal's policy implications.
3. The proposal's objectives (general and specific).
4. Methodology and data sources (explain in detail which databases will be used). It is very important to include a good description of the database in your proposal and also to provide evidence of access to the data. The methodology should also include the strategy for the implementation of the case studies.
5. Expected products and results.
6. Activity plan.

7. The composition and background of the research team. Please attach CVs and clearly label relevant experience. Maximum 3 pages per researcher.
8. Bibliography.
9. A Research budget in a separate document.
10. A Travel budget to attend the 2 workshops (in Washington DC and Montevideo) in a separate document.

The proposal **shall not exceed four thousand words** (excluding CVs, budgets and bibliography).

9. PARTICIPATION CRITERIA

Research institutions may present proposals individually or jointly with other institutions in the same country or in the region. For administrative purposes, IDB and RED SUR will request that each institution sign a letter of agreement, which will require a separate budget per institution.

Proposing research institutions should be based in the Latin American and Caribbean region. United States and European institutions do not qualify. However, researchers from the United States and Europe can participate with research teams from proposing institutions.

10. MILESTONES

Deadline for submission of proposals: March 15, 2017.
Expected communication of selected proposals: March 30, 2017.
Inception workshop: April, 2017.
First draft of papers: October 30, 2017.
Second workshop: November, 2017.
Final version of papers: November 30, 2017.

11. PAYMENT SCHEDULE

- **30 percent** within 30 days of signing the formal agreement between the respective research center and the IDB.
- **30 percent** within 30 days of approving the first draft of the research paper.
- **40 percent** upon approval of the final research paper.

12. REFERENCES

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