

FINAL THECNICAL REPORT

**PROMOTING INNOVATION IN THE SERVICES SECTOR: TOWARDS
PRODUCTIVITY AND COMPETITIVENESS**

IDRC Project Number: 106966-001

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CINVE

Centro de Investigaciones Económicas, Uruguay

Location of Study:

Argentina, Brazil, Chile, Colombia, Costa Rica, Jamaica, Mexico, Peru, Uruguay

1. Executive Summary

- **Objective.** The general objective of this research is to increase understanding of innovation and productivity in market services at the firm level in Latin America and the Caribbean, with a special focus on the role of public policy. The project has three complementary components: (a) a quantitative analysis on service innovation and productivity based mostly on innovation surveys or similar datasets, (b) an analysis of case studies on service sector innovation and (c) impact evaluations. The project was carried out in collaboration with the IDB and 11 research teams in 9 Latin American and Caribbean countries: Argentina, Brazil, Chile, Colombia, Costa Rica, Jamaica, Mexico, Peru and Uruguay.
- **Research findings:** The *quantitative analysis* performed in Brazil, Chile, Colombia, Mexico, Peru and Uruguay shows that: i. the distinction between R&D and innovation is important in services; many businesses innovate, but few conduct R&D, ii. innovation in services is more open; it is based on external inputs and demands greater collaboration (specially from customers), iii. services protect their intellectual property through informal and ad-hoc mechanisms (patents are of little value for most services), iv. there are fewer fixed costs to generate innovation (innovation is generated in more ad-hoc less planned processes), but services face greater challenges when it comes to accessing finance for innovation (high product specificity, intangibility, difficulties in IP protection); v. technological (product or process) innovation continues to be relevant for productivity, but non-technological (marketing, organizational) innovation is also important for service firms; vi. service firms are the least likely to receive government support, especially traditional service firms. From the *impact evaluations* can be concluded that, except in the case of Chile, the policies supporting innovation have resulted in positive effects on innovative efforts, innovation outputs and in some cases productivity or other relevant performance variables of firms. It is important to highlight that there are almost no impact evaluations of innovation policies or programs on performance for the service sector in the world, therefore the contribution of the project in this particular point to the literature and to policy is very important. The *case studies* suggest a complementary role of technological and non-technological innovation, the usefulness to take into account an open and inclusive way of performing incremental innovation and the need of reinforcing

the national innovation systems by placing service innovation as an essential ingredient where different policy strategies apply.

- **Project outputs.** As a result of the research project, 20 research papers were written, 10 are already published as CINVE working papers, and 5 as IDB documents, the others will be published soon as working papers. 9 of these 20 papers were already submitted to peer-reviewed journals. Also as a result of the research project we are editing a special issue on Service Innovation of the Journal Emerging Markets Finance and Trade (2012 Impact factor: 1.19). A book containing the main findings of the project and directed to Latin American and Caribbean policymakers is to be published. Finally, 2 policy briefs with the most important findings of the research project were written. This output was disseminated in different academic and policy oriented events: e.g. Meide 2013, Globelics 2013, Lalics 2013, IDB Service Innovation Regional Policy Dialogue Meeting in Panama and Jamaica, Colciencias Service Innovation Policy Meeting in Bogota, World Bank Conference “Making Growth Happen: Implementing Policies for Competitive Industries”.
- **Project outcomes.** Related to research and knowledge: the project generated knowledge in an area where research is very scarce worldwide, i.e. the links between innovation and productivity in services; moreover it generated unique evidence for developing countries where the research on this topic is almost inexistent. Related to changes in behavior, capacities, actions or relationships of researchers, networks and research institutions: the project contributed to capacity building and network formation in a field (innovation) where there is a very small number of researchers in Latin America and the Caribbean; the interaction with international researchers in the field in different events and the encouragement to follow rigorous processes during the research and in the process of publication of research outputs has contributed to these goals. Related to policy influence and changes in behavior, capacities, actions or relationships of research users: the results of the project were presented to first level policymakers of LAC in different events, many of them said after these events that the evidence presented will influence policymaking, in particular, rebalancing the innovation policy priorities towards the service sector.

2. The research problem

The performance and productivity levels of the service sector is becoming increasingly decisive for promoting growth and equality in both developed economies and, particularly, in developing ones. While the importance of the service sector has been increasing in Latin America and the Caribbean (LAC), its rate of productivity growth is relatively low, particularly among small and medium enterprises, when compared to domestic manufacturing, and has been identified as the sector pulling down aggregate productivity levels. Since the service sector has traditionally been seen as less innovative than manufacturing, national innovation policies have paid limited attention to firms in this sector. If policies of innovation are to be effective and productivity-enhancing, they need to reflect the ways in which innovation takes place inside the service sector firms.

Existing empirical evidence on innovation and productivity in the service sector is restricted to developed countries, not being available any systematic evidence for LAC countries. This project begins to fill this gap. The main objective of the project is to generate a comparative analysis on the determinants of innovation in the service sector firms and on the impact of different kinds of private-public interventions in service innovation in LAC countries. It aimed to design service sector-focused policies closing policy makers' knowledge gaps with regards to whether and how to intervene in this sector, and correcting the bias against services in the current regional policy mix. For this purpose the project analyzed in depth case studies that document innovation in the service sector and evaluated the impact of public interventions in LAC. This project was part of a coordinated research effort with the Inter-American Development Bank (IDB).

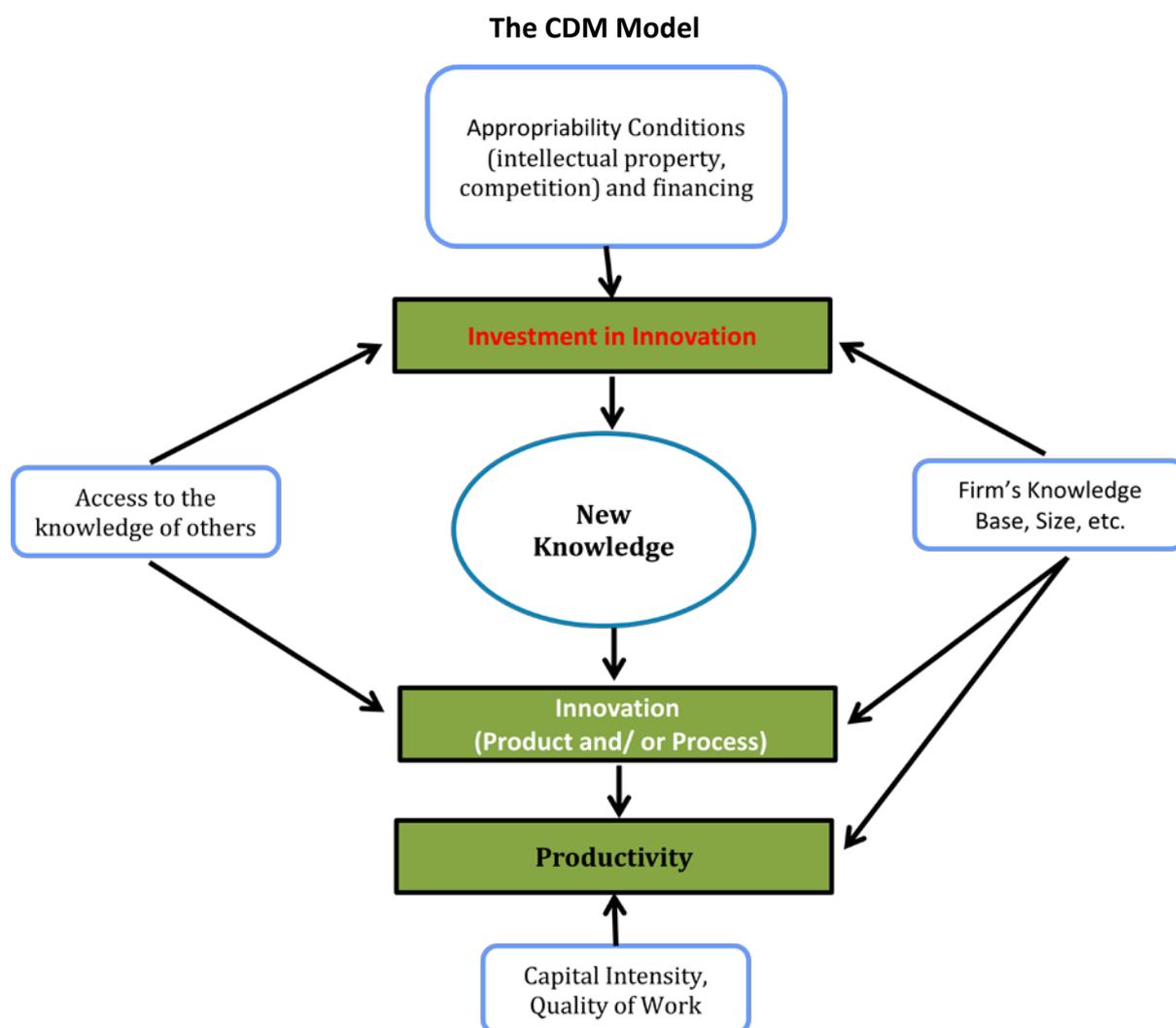
The project generated comparable studies that led to the edition of a special issue on Service Innovation in the academic journal *Emerging Markets Finance and Trade* (2012 Impact factor: 1.19) and a book. We also produced two comparative papers and two policy briefs.

3. Methodology

The project had three complementary components: (a) a quantitative analysis on service innovation and productivity based mostly on innovation surveys or similar datasets, (b) an analysis of case studies on service sector innovation and (c) impact evaluations.

The quantitative analysis

The conceptual model that guided the quantitative analysis is based on a typical sequence of events: i. the firm decides whether or not to invest in innovation; ii. the firm decides the intensity of its investment; iii. the production of innovations: if the firm introduces new products or processes (other measures use patents or innovative sales); iv. productivity as a function of innovations. Each of these stages was estimated with data for Brazil, Chile, Colombia, Mexico, Peru and Uruguay.



Adapted from CDM (NBER, 1998).

Case studies

Case studies on services innovation were performed in 6 different LAC countries (Argentina, Chile, Brazil, Uruguay, Costa Rica and Jamaica) and 9 sectors (tourism, software-TIC, outsourcing, mining, logistics, retail, creative services, sport services, and biotech services). Even if case studies cannot be representative of an economy as a whole, the main mechanisms of innovation and successful interventions can be understood. Key lessons can be identified, highlighting the importance of innovation policy and offering insight into ways of designing specific innovation policies for the service sector. In other words, case studies can shed light on the transmission mechanisms at work that underlie the correlations provided by the quantitative-econometric analysis.

The key questions that guided the work of the different research teams where: How does innovation occur inside firms?; What types of innovations has the firm undertaken?; What innovation strategies are successful in terms of increasing productivity and competitiveness?; What are the key drivers and barriers to innovation (available necessary skills, ad-hoc alliance, lack of finance, risk aversion, competing business priorities, etc.); What is the role of supporting institutions and infrastructure (e.g., research centers, ICT infrastructure, software, training, etc.); What is the role of sector institutions (sector chambers, specialized technology transfer institutions, etc.) in promoting the occurrence and diffusion of innovations that eventually prove successful?; How do existing policy practices and innovation-promotion policies affect the direction and propensity of innovative practices?; What type of interactions with public officials have occurred?

A common questionnaire aimed to indentify useful information to answer the above questions was distributed to all teams; however each team had the possibility to adapt the questionnaire to the needs of the particular case being studied.

Impact evaluations

Impact evaluations are very important to evaluate the effectiveness of public interventions (policies, programs). Impact evaluations were carried out in Argentina, Chile, Colombia and Uruguay. In order to produce impact evaluation of public interventions in the service sector, the research papers followed the implementation of quasi-experimental approaches. These

approaches require very specific data on public interventions, public policy or specific programs, data on firms affected by the intervention or participating in the program, and data on a control group of similar firms not affected or not participating.

The main needed assumption is that the participation or selection of firms into the treatment group should be based on some observable or unobservable characteristic that can be controlled for. Among the techniques that were used in the research project are: propensity score matching, difference-in-differences and fixed effects models which use data before and after the program for the two groups to account for a certain type of unobserved heterogeneity. A second strand of techniques used included instrumental variables approaches.

4. Project activities

During the project the following milestones were achieved: 1) the call for proposals was launched (April 10, 2012), 2) the proposals to be funded were selected through a peer reviewed process (May 28, 2012), 3) the organization of an inception workshop (Montevideo, Uruguay) with the objectives of setting the emphases for the research project, give feedback regarding the proposals, agree on methodologies, and share work schedules and establish mechanisms for communication and reporting advances (June 21, 2012), 4) an intermediate workshop with the objective of discussing the advances of the project and providing interactions and getting feedback from policymakers was carry out in Lima, Peru (30 October, 2012), 5) two rounds of detailed comments to research report drafts were made (November, 2012 and March, 2013) in order to ensure research quality and focus, 6) April 30, 2013, final draft of the research papers; 7) June 17-20, 2013, final workshop and policy outreach event in Panama, as part of the Regional Policy Dialogue meeting of the IDB, with the objective to discuss the research results and disseminate them among policymakers and officials from multilateral institutions; 8) July-December, 2013, activities related to the edition of a special issue on Innovation in Services of the journal Emerging Markets Finance and Trade, book draft, comparative papers and policy briefs and dissemination activities.

4.1 Call for proposals (March-April)

In preparation for the call

The first activity that the CINVE team (together with IDB team members) undertook, a few days after the start of the project, was to participate of the 2nd NESTI-TIP Expert Meeting on Service Innovation as part of the KNOWINNO project on “Innovation in Services the role of R&D and R&D Policies” (INNOSERV) being carried out with support of the European Commission on March 20-21, 2012, at the OECD’s headquarters in Paris. The meeting encompassed contributions from leading academic researchers, business sector representatives, national policymakers, and delegates from the OECD NESTI and TIP Working Parties.

The OECD’s INNOSERV project runs in parallel to our project in LAC. Moreover, this project has several similar objectives with our project: (a) study the relationship between R&D and innovation in the service sector, (b) assess the impact of R&D and innovation in services on productivity, employment and growth for both services and manufacturing sectors, (c) identify the barriers to R&D and innovation in services and the role and impacts of RD&I policies aimed at the service sector and (d) improve current definitions and measures of R&D/innovation in services.

Our participation in the meeting served as a capacity building exercise and as opportunity to coordinate the collaboration between the OECD’s, IDB’s and CINVE’s research teams. Permanent exchanges with this parallel project will allow not only comparability but the implementation of similar methodologies, besides the consultation and exchange of knowledge.

The opportunity to attend this meeting was also important to contact potential external advisors for our project and to indentify useful inputs to improve and better focus the call for proposal.

The call

The call for proposals (see attached at the end of this report), written by CINVE and IDB research teams, was launched on the 10th of April, and was distributed widely among more than 300 research institutions in LAC.

4.2 The selection of proposals (May)

The due date for receiving proposals was the 11th of May. The evaluation of proposals was made by a panel of experts, composed by an external advisor: Luis Rubalcaba (Universidad Alcala de Henares); IDB research team members: Gustavo Crespi, Ezequiel Tacsir, and Fernando Vargas; and CINVE research team members: Diego Aboal, Paula Garda, Bibiana Lanzilotta, and Marcelo Perera.

Each research team could choose to present proposals for any number of components (i.e., quantitative analysis, case study and impact evaluation) or just one. The panel of experts chose one or more according to some predefined criteria. Eligibility was based on scope of the project, quality of the proposal and research team, novelty of the case studies and impact evaluations and the feasibility to affect public policy. We received 22 proposals, some of them for more than one component.

After carefully assessing the proposals, the panel chose 5 quantitative studies, 6 case studies and 3 impact evaluations. The selected proposals are from 11 different research teams. The next table shows the studies selected, the institution, countries covered and the scope of the research proposal. The selected research proposals were announced on May 28th, 2012.

Table 1. Selected projects

Country	Institutions	Financed by	Scope
Quantitative studies			
Chile	Intelis	IADB	Service sector
Colombia	Universidad del Rosario	IADB	Service sector
Mexico	Universidad Autónoma Metropolitana	IADB	Service sector
Brazil	FUNDACE - FEA-RP/USP	IADB	KIBS
Peru	Pontificia Universidad Católica del Perú	Cinve-IDRC	Service sector
Case Studies			
Chile	Intelis	Cinve-IDRC	Traditional services, business services, logistics and retail, and KIBS.
Argentina	CENIT	Cinve-IDRC	Rural tourism
Argentina, Brazil, Chile, Uruguay	Universidad Adolfo Ibáñez, Chile and Canada Research Chair on the Management of Technology/UQAM	Cinve-IDRC	Biotechnology services
Argentina	CIPPEC	Cinve-IDRC	Effect of Buenos Aires Emprede Program on innovation and productivity of SMEs in SITS
Costa Rica	CLACDS -INCAE business school	Cinve-IDRC	Sustainable Tourism
Jamaica	The competitiveness Company	Cinve-IDRC	Intellectual Property Infrastructure
Impact evaluation			
Argentina	CIPPEC	*	Evaluate impact of public financing programs on the innovation decision and the productivity of SMEs in SITS
Colombia	Metrica	Cinve-IDRC	Evaluate impact of financing programs offered by Colciencias to develop service sector firms innovation projects
Chile	Intelis	*	Evaluate the impact of utilization of public programs on innovation and productivity in the services industry

* Carry out together with the Case Study and uses the same budget

4.3 Inception workshop (June 2012, Montevideo, Uruguay)

The inception workshop took place on 21st and 22nd of June, 2012, at CINVE facilities in Montevideo, Uruguay. The objective of the workshop was to serve as a platform for discussion and exchange among the different national teams, international experts, OECD's, IDB's and CINVE's teams and public agents. The specific objectives of the seminar were: discussing the structure of each national project, methodologies, characteristics of the databases, questionnaires and possible limitations from the various strands of work. It also served to explain the objectives of the project and to agree on the research agenda for each study.

The seminar was attended by the principal investigators of the 11 research teams receiving funding from the IDB and CINVE-IDRC, an external advisor, researchers from the teams of IDB, CINVE-IDRC and OECD and delegates from the National Agency for Research and Innovation of Uruguay.

After the workshop, each research team received from IDB and CINVE-IDRC teams: 1. comments and suggestions, 2. guidelines for the quantitative studies, 3. guidelines for case studies, 4. a questionnaire for the case studies' interviews (with a minimum set of questions that each case study should address) and 5. a questionnaire to conduct a survey to policymakers to map the service innovation policy environment in each country. (Find these documents attached at the end of the report)

Additionally, it was established a mechanism of communication between the coordinators and the research teams, that consisted of periodic short reports of progress and Skype communications in those cases that were needed.

We believe the inception workshop served well the purposes established.

4.4 Second workshop (October 2012, Lima, Peru)

This workshop was held on the 30th and 31st of October in Lima, Peru, on the premises of the University of the Pacific. The seminar was attended by the principal investigators of the 12

projects financed by the IDB and IDRC, the research coordinators from CINVE and IDB, an external advisor and policymakers.

The objective of the meeting was to provide a platform for the discussion of the research progress and provide exchange between different national teams, international experts, policymakers and CINVE-IDB-IDRC research coordinators.

The event began with an introduction and project overview, followed by the presentation of the objectives and progress of each of the components of the project, the contributions of policymakers and the discussion of dissemination strategies.

It is important to highlight the presence of policymakers from Argentina, Chile, Peru and Colombia in the event. The exchange between policymakers and researchers was very productive. It was important in first place because comments from policymakers helped to better focus the research on issues relevant for policymaking. But it was also important to put in policymakers' agenda the issue of innovation in services and its relevance for productivity.

4.5 Research report drafts (October 2012-February 2013)

The research teams have provided two research report drafts, the first one at the end of October, 2012 and the second one in February, 2013. All drafts were carefully reviewed by the coordinators of this research project and by an external advisor. Very detailed comments were made to each report with the objective of improving the quality and maintaining the focus of the research.

4.6 Final Draft (April 2013)

In April 2013 the final version of the papers were received.

4.7 Closing seminar in Panama (June 2013)

The closing seminar of the project was carry out in parallel with the IDB Regional Innovation Policy Dialogue, a meeting that every year summons first level policymakers from Latin America to discuss important issues for the innovation policy in the region. Some of the

researchers and the coordinators of the project had the opportunity to present to policymakers the main findings of the research project. The impact of this activity was important and will be discussed in greater detail in the next section.

4.8 Special issue, book draft, comparative papers and dissemination (July-December)

The last semester of the research project was a busy semester: 2 comparative papers and 2 policy briefs were written, the process leading to the edition of the special issue on Innovation in Services of the Journal Emerging Markets Finance and Trade began, the preparation of the book draft was done, and dissemination activities were carry out.

5. Synthesis of research results

The *quantitative analysis* performed in Brazil, Chile, Colombia, Mexico, Peru and Uruguay shows that: i. the distinction between R&D and innovation is important in services; many businesses innovate, but few conduct R&D, ii. innovation in services is more open; it is based on external inputs and demands greater collaboration, iii. services protect their intellectual property through informal and ad-hoc mechanisms, iv. there are fewer fixed costs for innovating, but services face greater challenges when it comes to accessing finance for innovation (high product specificity, intangibility, difficulties in IP protection); v. technological (process or product) innovation continues to be relevant for productivity, but non-technological (organizational or marketing) innovation is also important for service firms; vi. service firms are the least likely to receive government support, especially traditional service firms.

In the next table the main factors found to influence innovation in services vis a vis innovation in manufacturing according to the research papers are summarized.

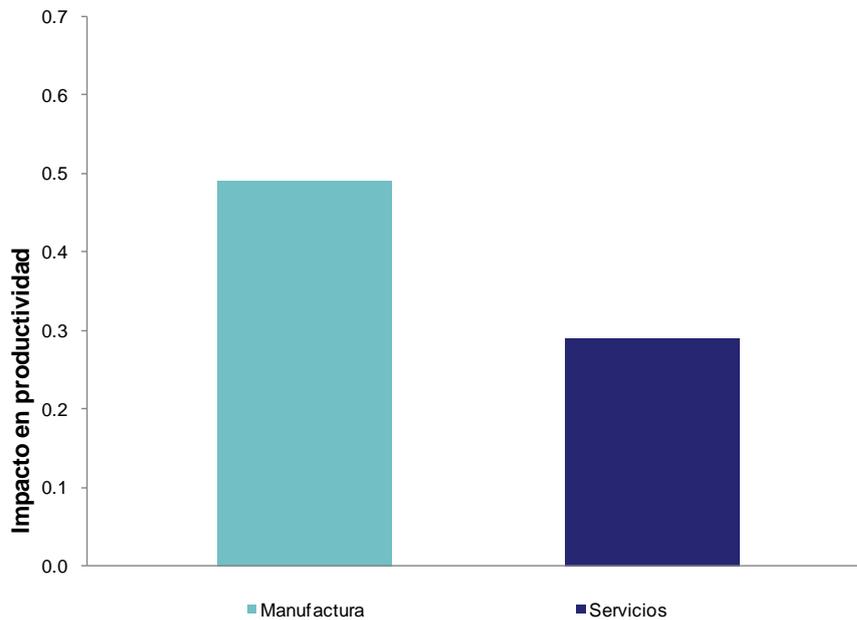
Table 2. Factors that influence innovation in services vis a vis manufacturing

	High Relevance	Medium Relevance	Low Relevance	Not Relevant
	Manufacturing		Services	
Impact on the innovation of:				
Level of knowledge accumulated	High Relevance	Medium Relevance		
Ability to protect intellectual property through formal mechanisms	High Relevance	Medium Relevance		
Relevance of external (market) sources of information (externalities)	High Relevance	High Relevance		
Relevance of public sources of information (externalities)	Not Relevant	Medium Relevance		
Formal links to promote innovation (cooperation)	Medium Relevance	High Relevance		
Fixed cost (size)	High Relevance	Low Relevance		
Financing	Medium Relevance	High Relevance		
Human capital	High Relevance	Medium Relevance		
Commercial integration (exports and foreign ownership)	Medium Relevance	Not Relevant		

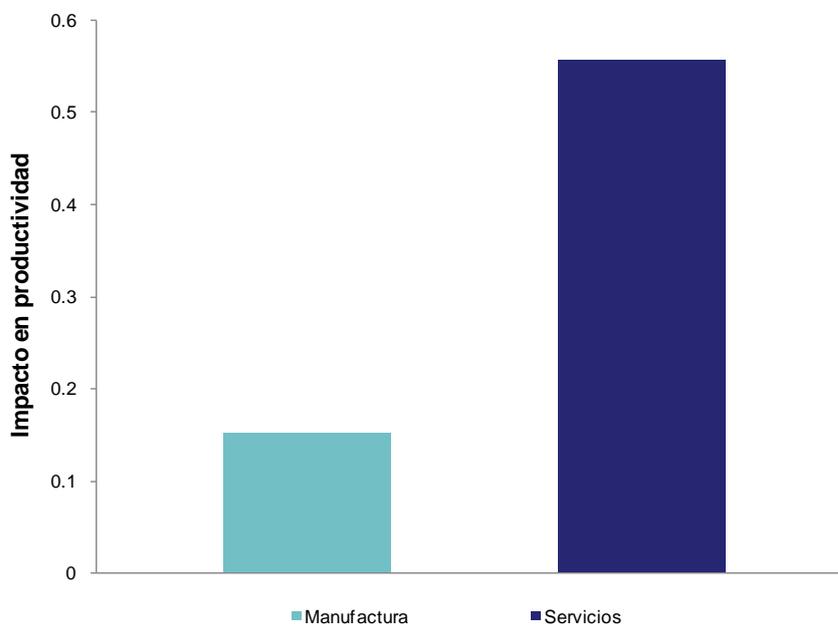
Both technological and non-technological innovation occurs at lower rates among LAC firms than OECD firms— in both manufactures and services. The intensity of technological innovation and non-technological innovation is similar for manufactures in the OECD and LAC alike. However, there is a bias toward non-technological innovation in services for both regions (i.e. business plans, organizational change, commercialization)

The impact of technological innovation is greater in manufacturing than in services. However, the impact of non-technological innovation is more important for service firms. In the following figures we show the average impact on productivity of both types of innovation.

**Figure 1. Impact of Investment in Technological Innovation on Productivity in LAC
(Median)**



**Figure 2. Impact of Investment in Non-Technological Innovation on Productivity in LAC
(Median)**



According to the studies, although there are horizontal support programs to service innovation in LAC, in practice these programs are not neutral in that they demonstrate a bias toward technological innovation and little, if any, consideration is given to non-

technological innovation. The focus on higher technological innovation is given to vertical programs, which consequently leads to a bias toward KIBS (knowledge intensive business services).

At the same time, the focus on “supply” biases the instrument matrix against those sectors that are more likely to adopt technology and existing *best practices* than generate new, productive knowledge.

This leads to a marginal space for policies suitable to the traditional service sectors (and to a lesser degree, more traditional manufacturing).

OECD countries are adjusting their instrument matrix in two directions: (a) *incorporating vertical programs* that are oriented toward traditional services (e.g. Finland’s SERVE prioritizes retail), (b) *adjusting the design* of horizontal programs to accommodate non-technological innovation (e.g. tax credits in Holland and Denmark, public purchases in the UK) and (c) including the *activities* of industrial services (e.g. Japan.). The conclusion is that LAC should be doing the same.

From the ***impact evaluations*** can be concluded that, except in the case of Chile, the policies supporting innovation have resulted in positive effects on innovative efforts, innovation outputs and in some cases productivity or other relevant performance variables of firms. It is important to highlight that there are almost no impact evaluations of innovation policies or programs on performance for the service sector in the world, therefore the contribution of the project in this particular point to the literature and to policy is very important. In what follows we summarize the result of the different impact evaluations.

The Argentinean study evaluates the impact that tax benefits and financing programs for SMEs innovation has on the software and IT services sector. The authors estimate the effect of these programs on investment decisions in innovation, patenting, productivity, investment and employment. The results show that companies receiving tax benefits were more likely to invest in innovation, while funding programs had a similar but less robust effect on the decision to innovate. Meanwhile, tax benefits appear to have a significant

impact in terms of improving productivity and increasing employment levels, while financing was shown to have a positive effect on investment in physical capital. The hypothesis of crowding -out between subsidies and private investment is rejected.

Chile's study seeks to evaluate the effects of public funding programs for innovation on the performance of Chilean services firms. Using the method of difference in differences with propensity score matching, the authors find that the package of policies evaluated have not helped to improve the innovative performance of companies or to alleviate their financial constraints. Nor are significant effects in terms of sales or productivity. While these results hold when analyzing companies of different sizes and at different times, there are some evidence of a positive impact on services that are knowledge intensive.

In Colombia, the impact of Colciencias' programs which provides funding for innovative projects in different business areas (including health, education, biotechnology, ICT and social sciences) were assessed. The objective of the study is to evaluate the impact on productivity and businesses sales. Based on panel data from the Annual Survey of Services and Colciencias' administrative records, the authors implement a fixed effects strategy, through which it is obtained the result that the program led to a positive effect on productivity and increased sales. Specifically, the program led to an increase in labor productivity of around 24 %. The highest impact is found in the case of small firms and for knowledge-intensive services. In turn, the study finds that short duration projects have resulted in significant increases in productivity; these effects are manifested once the project is fully implemented. This leads to the conclusion that it is important to have impact evaluations over longer periods, to be able to see the complete effect of programs.

Finally, in the case of Uruguay the aim is to evaluate the effects of public funding on innovation expenditures, innovation and productivity. To do this, the authors use data from two waves of innovation surveys for manufacturing and services. Based on propensity score matching method, they estimate the impact of having access to public funding. With respect to services, public support leads to increased private spending on R&D and sales of new products. There are also positive impacts on productivity.

Table 3 summarizes the results of the *case studies*. The case studies suggest a complementary role of technological and non-technological innovation, the usefulness to take into account an open and inclusive way of performing incremental innovation and the need of reinforcing the national innovation systems by placing service innovation as an essential ingredient where different policy strategies apply.

Table 3. Service innovation in LAC: summary of case studies

Case study	Type of innovation	Objective	NIS and the role of public support	Networking and knowledge transfer	Competences and competitiveness(economic impact)	Inclusive innovation(social impact)
Chile Mining services	Radical process or product innovations. Development based on technology, Important role of R&D.	Competitiveness is the main objective	Public innovation policies have been important, but not fundamental. For small firms public incentives are more important. Customers, professional associations and pro-innovation culture are important.	Innovations are supported by knowledge intensive services (such as communications systems). Local and foreign partners (consumers), have been determinant.	Impact not only in mining firms but also in regions different from those where the mineral is located due to the geographical distribution and concentration of firms	Potential social impact through developing solutions for more effective fragmentation, with less energy consumption and less impact of mining activities
Chile Logistics	Development of new service delivery system. Technological and organizational innovations. Mostly incremental.	Regional competitiveness. Program aimed to consolidate a long-term strategy, and improve performance of the logistics industry	Various public institutions have developed interventions to strengthen the logistics sector in the region, but the results are not satisfactory. Suppliers and partnerships are relevant.	Importance of public-private collaboration. Absence of strong social capital and collaboration determinant of failure of innovations.	The development of the sector has potential spillovers all over the economy – increased infrastructure, more internationalization, etc. Some firms have been able to innovate and enhance their productivity, while others remain behind	Increase demand of high-skilled human capital
Chile Off-shoring	Service engineering, tools, and design development and project management.	Regional competitiveness. Program to achieve greater value added in firms' services	Public programs with a regional strategy to improve the value chain integration and productivity of local actors. Association with engineering services is important.	Interaction with clients, and association among firms of the sector are very relevant. Strong absence of associations has been a determinant of failure.	Cost reduction and increase in productivity. Enhancing competitiveness with great linkages within the industry	Innovation in this sector requires investments in human capital, service provision, infrastructure with strong social impact.
Chile Retail	New logistic optimization	Competitiveness and	Firms have developed their innovations with	Large firms collaborate among	Possible spillovers trough the economy with the	Impact on customer satisfaction.

	system, consumer profiling, self-service devices and development of e-commerce. Technological and non-technological innovations.	business consolidation	their own funds. Government funds are not an important. Role of external consultancy/KIBS. International benchmarking. Exploration of margins created by regulations.	each other, but weak partnership of foreign firms with local, legitimated local retail actors. External knowledge from KIBS are important.	internationalization of the sector	Improvement in service quality.
Argentina ICT	Incremental process (adaptations). Clients and internal development are key elements. R&D is important.	Growth of start-ups.	Great role of public support to help mitigate financial constraints and weakness of organizational capital. Important role of clients.	Access to networks and contacts to allow overcome financial constraints and other informational asymmetries. Interaction with clients and external knowledge from KIBS are important.	Access to new clients and new markets. Innovations have spillovers across the economy.	Increased employment, increased sales and product diversity.
Argentina Rural Tourism	Non-technological innovation, centered on new experience for customers. Most innovations are incremental.	Competitiveness. Social inclusion of small farmers, woman, and other vulnerable groups. Human capital development and training.	Public institutions supporting innovation programs play a significant role for the development of human capital, reduce financial constraints, and reduce informational asymmetries	Networks and associations appear to be one the most relevant elements for the success of the innovation.	New clients, more market share, and increased earnings. Increased competitiveness in, for example, wine sectors and associated sectors.	Beneficial for small agriculture groups and associations and vulnerable groups
Costa Rica Tourism	Mainly non-technological innovations. Lead also to investment in new technologies and physical capital.	Increase sustainability of the tourism sector. Social inclusion: the program incentives supporting schools, local producers, communities in the neighborhood.	Public policies played a limited role. No fiscal incentives, but other incentives to innovate.	Some interactions between civil society and firms. Associations in the sector and objectives not aligned at the national level. Not enough networking. Leading to inefficiencies- ineffectiveness.	Maintain market share, cost saving.	Social reputation is seen as an objective of the innovation. Increased sustainability. Some cases with direct social objectives, for example to increase social security in the local area. Client satisfaction.

Jamaica Cultural Services	Innovation relies on creativity, uniqueness and authenticity, which involves more radical innovation. Technological and non-technological innovations.	Increase competitiveness. Social inclusion, in particular in the case of the non-traditional theatre.	Scarce support programs for innovation. Only one case in which public institutions helped developing the human capital needed, but most claim for inadequate policy framework (weak IPR). Civil dynamism, collaboration between university and key sectors (spin-off in Athletics).	Collaboration (the lack of it) explains success (failures). Link with university is important in the case of Athletics.	Competitiveness in some cases (sports mainly). Spillovers over the rest of the economy, mainly through tourism.	Some impacts on community cohesion and new skills development.
Regional (Argentina-Brasil-Chile-Uruguay) Biotech	These are R&D activities, with radical technological innovations, developed inside the firm with strong associations (universities, etc.)	Increase competitiveness	Requires strong government incentives and support. In general, lack of continuity in policy is reinforced by inadequate funds and idiosyncratic academic practices.	Cooperation is essential: links with universities, public laboratories are determinant of the success of innovations.	General spillovers to the economy: technologies applied to agriculture, environmental remediation services, food, mining, pharmaceuticals, and other industrial activities.	Strong social impact through new medicines, new seeds, key genetic information and environmental services. Human capital development.

6. Project outputs

As a result of the research project, 20 research papers were written, 10 are already published as CINVE working papers, and 5 as IDB documents, the others will be published soon as working papers. 9 of these 20 papers were already submitted to peer-reviewed journals. 4 are comparative or conceptual papers written by the coordinators and the external advisor.

Also as a result of the research project we are editing a special issue on Service Innovation of the Journal Emerging Markets Finance and Trade (2012 Impact factor: 1.19). Emerging Markets Finance & Trade is a peer-reviewed journal that features contributions that are policy oriented and interdisciplinary, employing sound econometric methods, using macro, micro, financial, institutional, and political economy data. Geographical coverage includes emerging market economies of Europe, the Balkans, the Middle East, Asia, Africa, and Latin America.

A book containing the main findings of the project and directed to Latin American and Caribbean policymakers is to be published.

Finally, 2 policy briefs with the most important findings of the research project were written.

This output was disseminated in different academic and policy oriented events: Meide 2013, Globelics 2013, Lalics 2013, IDB Service Innovation Regional Policy Dialogue Meeting in Panama and Jamaica, Colciencias Service Innovation Policy Meeting in Bogota, World Bank Conference "Making Growth Happen: Implementing Policies for Competitive Industries". More detail about the last 4 activities will be given in the Project Outcomes section.

The Conference on Micro Evidence on Innovation in Developing Economies (MEIDE) is a conference organized by UNU-MERIT (United Nations University - Maastricht Economic and Social Research Institute on Innovation and Technology), that takes place every year in different developing country. The aim of this conference is to bring together researchers

from around the world to discuss the importance of innovation for economic development and growth. The edition 2013 took place in Chile (November, 2013).

Globelics (The global network for the economics of learning, innovation, and competence building systems) is a worldwide, open and diverse community of scholars working on innovation and competence building in the context of economic development. The major purpose of the organisation is to contribute to academic knowledge creation and exchange in the field of innovation and development. The 2013 conference took place in Ankara, Turkey (September).

LALICS is the Latin American chapter of Globelics. LALICS is a Latin American and Caribbean academic network that gathers scientists and researchers concerned about the study of the innovation processes and their linkage to national/regional development, innovation systems, learning processes and capacity building in the region. The 2013 conference took place in Rio de Janeiro, Brazil (November).

7. Project outcomes

Related to research and knowledge. The project generated knowledge in an area where research is very scarce worldwide, i.e. the links between innovation and productivity in services; moreover it generated unique evidence for developing countries where the research on this topic is almost inexistent.

Related to changes in behavior, capacities, actions or relationships of researchers, networks and research institutions. The project contributed to capacity building and network formation in a field (innovation) where there is a very small number of researchers in Latin America and the Caribbean; the interaction with international researchers in the field in different events and the encouragement to follow rigorous processes during the research and in the process of publication of research outputs has contributed to these goals. All research teams have been encouraged to submit their research papers to peer-reviewed journals, and 9 papers have been already submitted. We see this as an opportunity of learning the very specific knowledge associated to the process of publication in refereed

journals. All the researchers have also interacted with local policymakers during the research. Researchers from the project have participated at least of the following activities: Meide 2013, Globelics 2013, Lalic 2013, IDB Service Innovation Regional Policy Dialogue Meeting in Panama and Jamaica, Colciencias Service Innovation Policy Meeting in Bogota, World Bank Conference “Making Growth Happen: Implementing Policies for Competitive Industries”. In these events they had the opportunity to interact with renowned international experts and policymakers. The project contributed also to capacity building in CINVE not only of the researcher involved in the project, but also of the administrative services that have to deal with an important project with a multi-country scope.

Related to policy influence and changes in behavior, capacities, actions or relationships of research users. The results of the project were presented to first level policymakers of LAC in different events, many of them said after these events that the evidence presented will influence policymaking, in particular, rebalancing the innovation policy priorities towards the service sector. In what follows we describe in greater detail the channels (events) through which we hope to influence the innovation policy in the region.

Closing Workshop with Specialists of the IDB. June 2013, Panama City, Panama

The closing workshop of the research project was held on June 17-18 in Panama City. The seminar was attended by the heads of each of the eleven teams financed by the IDB and CINVE -IDRC, the external advisor, and researchers and specialists from the IDB, IDRC and CINVE. The objective of this workshop was to present and disseminate the results of the different studies, as well as, get feedback and discuss the implications for public policies that had emerged from these studies.

The commentators of the various studies were mostly members of staff of specialists of the Competitiveness and Innovation Division of the IDB, who have an important policy influence in the region. They are in charge of promoting innovation projects and programs in different countries of LAC. This workshop also became a day of immersion in the topic of innovation in the service sector for them.

Latin America Regional Policy Dialogue on Innovation in Services. June 2013, Panama City, Panama

The goal of the RPD is to identify best policy practices in areas that can increase innovation, productivity and competitiveness in firms. The dialogue also serves as a platform for identification of regional cooperative initiatives and for the identification of collaborative efforts between the IDB and its borrowing member countries that aim to explore key research topics of interest to IDB member countries.

First-level policymakers, including Ministers and Heads of Agencies and organizations with responsibilities for innovation policies, from different countries in the region attended this dialogue. The countries represented in the meeting were: Argentina, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, El Salvador, Guatemala, Mexico, Nicaragua, Panama, Paraguay, Peru, and Uruguay.

The potential role of services for the development of the region, how to foster innovation in this sector and the existing experience in LAC was discussed. Four of the IDRC-funded researchers presented at this meeting the findings of the research project: Claudio Bravo (Intelis), Lucio Castro (CIPPEC), Jorge Niosi (University of Quebec in Montreal, Canada) and Diego Aboal (CINVE). The first three presented case studies for Chile, Argentina and the Southern Cone, respectively, while Diego Aboal described the state of service innovation policies in LAC and rationality to implement them, and presented a summary of the impact evaluations carried out in the project.

The ***assessment by policymakers*** of the meeting was largely positive. Below we summarize some of the judgments at the end of the event.

As can be seen in Table 1, the participants, on a scale of 1 to 5, evaluated all items consulted with an average rating that was above 4, and generally higher than 4.5, with the exception of item time available for questions, which was rated at 4.3. It is particularly interesting to note that the item "I was able to extract 'lessons learned'" was assessed with an average

rating of 4.5, this allows to be optimistic about the future impact of the results of the project presented at the meeting.

Even more interesting is to see the answers to the question "In the future, do you think that the information obtained in any of the following activities could be applied [to policy]?" Thirteen country representatives of the 17 respondents said the information could be applied to the design / policy reform or programs, 12 to design / project implementation, 8 to cooperation with other states and 10 for technical or financial assistance from the IDB or another donor.

While it is expected that not all who intend to apply the information (i.e. research output) to the above dimensions will effectively apply it, it is very likely that some of them will do. In fact, when they were consulted about the usefulness that similar meetings had in the past, the responses indicate that 6 of the 17 respondents had applied information to design / reform policies or programs, 8 the design / implementation of projects, 3 to cooperation with other states and 5 for technical or financial assistance from the IDB or another donor. If we take into account that some of the participants were attending the meeting for the first time and therefore could not have applied the knowledge transmitted in previous meetings, but actually the people that attended could, we might expect an even greater impact of the information passed on the meeting in Panama.

Some of the judgments made by countries representatives after the meeting were:

- Very interesting meeting. The opportunity to understand the theoretical underpinnings about this controversial issue was very important and enriching, but to see them with the case studies was what made this event excellent.
- Excellent the advances on the topic innovation in services, the studies, and the pioneer analysis in the region. The works go beyond the simple studies, including recommendations for design and implementation of different policies for the region.
- It is the first time I participate and see it is an important means of trade between the different members of the region space. The trip has helped me to generate leads and to have the opportunity to visit some programs after this meeting.

- Studies of very good level. It very interesting to have success stories that illustrate with real cases the theoretical insights. Excellent organization. Excellent level of networking. In fact I do not know if there are other instances of the type in LAC.
- We would like to know more about laws in specific countries that have had an impact on business innovation, productivity, etc.. More details on direct and indirect incentives. Learn more about investment risk in LAC. The meeting should include banks or "Venture Capital" agents to discuss financial markets issues.
- I think important to talk about regional development strategy (starting with Central America) and we need to build the system of country and regional indicators.
- Very interesting case studies. This type of presentations streamlines the discussion.

Table 4. Policymakers’ evaluation of the likely impact of the Latin American regional policy dialogue

Summary of participants' evaluations

SCALE 1-5 (1 = very dissatisfied / strongly disagree / very poor 5 = very satisfied / strongly agree / very good)	Participants																	Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	
Content and structure of the agenda	5	5	4	5	4	4	5	5	5	4	5	5	5	4		5	5	4.7
Time available for questions and dialogue	4	2	4	5	4	5	4	5	5	3	5	5	5	4	4	4	5	4.3
Timely availability of materials	4	4	4	5	4	5	5	5	5	5	5	5	4	4	4	2	4	4.4
Organization of the meeting (logistics)	5	4	5	5	4	5	5	5	5	5	5	5	5	4	5	4	5	4.8
Satisfaction with overall meeting	5	4	5	5	5	4	5	5	5	5	5		4	4	5	5	5	4.8
Quality of discussion	5	4	5	5	5	4	5	5	5	4	5	5	4	4	4	5	5	4.6
Exchange of best practices	4	5	5	5	4	4	5	5	4	4	5	5	4	3	4	5	5	4.5
Possibility of generating regional cooperation	4	4	5	5	4	5	5	5	4	5	5	5	4	2	5	3	5	4.4
Quality of presentations	5	4	4	4	5	4	4	5	5	5	5	5	5	5	4	5	5	4.6
Study Quality	5	4	4		5	5		5	5	5	5	4	5	5	4	4	5	4.7
I was able to draw lessons	5	4	4	5	4	4	5	5	5	4	5	5	4	4	4	5	5	4.5
Average	4.6	4.0	4.5	4.9	4.4	4.5	4.8	5.0	4.8	4.5	5.0	4.9	4.5	3.9	4.3	4.3	4.9	

Impact of previous meeting		Participants																	Total YES
INDICATE YES or NO		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	
In the past , if you have participated in previous meetings of the network, were you able to apply the information obtained in any of the following activities?																			
Design / reform policies or programs	YES								YES	YES		YES	YES	YES					6
Design / implementation of projects	YES				YES				YES	YES	YES	YES	YES	YES					8
Cooperation with other states						YES					YES		YES						3
Get technical or financial assistance from the IDB or other donor						YES		YES	YES	YES		YES	YES						5

Impact of current meeting		Participants																	Total YES
INDICATE YES or NO		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	
In the future, do you consider that you could apply the information obtained in any of the following activities?																			
Design / reform policies or programs	YES	YES	YES	YES	YES		YES				YES	YES	13						
Design / implementation of projects	YES	YES	YES	YES	YES				YES	YES	YES	YES	YES			YES	YES		12
Cooperation with other states		YES			YES							8							
Get technical or financial assistance from the IDB or other donor					YES			YES	YES	YES	YES	YES		YES	YES	YES	YES		10

Colciencias Service Innovation Policy Meeting. October 2013, Bogota, Colombia

Colciencias, the public agency responsible of coordinating the National System of Science, Technology and Innovation of Colombia, organized a meeting in October 2013 in Bogota Colombia to discuss the innovation in services. Diego Aboal was invited to present the results of the research project in this meeting. The meeting was attended mainly by Colombian policymakers. In an informal exchange with the Deputy Director of Colciencias, we learned that the results presented in Panama were already being used to frame Colciencias' new innovation programs.

Caribbean Regional Policy Dialogue: Innovation in the Caribbean Services Sector. November, 2013, Kingston, Jamaica

The results of the research project were presented in this meeting attended by first-level representatives of Caribbean countries. The dialogue brought together Caribbean policymakers from six countries (Belize, Dominican Republic, Haiti, Jamaica, Suriname, and Trinidad and Tobago). A total of approximately thirty two persons were in attendance among which twelve were policy makers.

In the following table we present policymakers' evaluation of the meeting. The results indicate that all the public officials believe that the meeting will have some impact in terms of new policy, programs, projects, cooperation between countries or in terms of request of support from donors for technical or financial support. 78% percent believe that it will have an impact on policy or program design or reform, and 89% on the request of technical or financial support.

Table 5. Policymakers' evaluation of the likely impacts of the Caribbean regional policy dialogue

Scale 1-5 (1= very dissatisfied/ strongly disagree/ very poor 5= very satisfied/ strongly agree/ very good)	Participants									Average
	1	2	3	4	5	6	7	8	9	
Content and structure of the agenda	5	4	5	5	5	4	4	5	5	4.7
Time available for questions and dialogue	5	4	4	2	5	3	4	4	5	4.0
Timely access to materials	5	4	4	4	5	3	4	2	5	4.0
Organization of the meeting (logistics)	5	4	5	5	5	4	4	5	5	4.7
Overall satisfaction with the meeting	4	4	5	5	5	4	4	4	5	4.4
Quality of discussion	5	5	4	4	4	4	4	5	5	4.4
Exchange of best practices	4	4	4	5	5	3	4	4	5	4.2
Possibility of generating regional cooperation	4	4	5	5	5	3	3	5	5	4.3
Quality of presentations	5	4	5	5	5	5	4	5	5	4.8
Quality of studies	5	3	4	4	5	4	4	5	5	4.3
I was able to extract lessons learned	5	4	4	3	4	5	4	5	5	4.3
<i>Average</i>	4.7	4.0	4.5	4.3	4.8	3.8	3.9	4.5	5.0	

Indicate YES or NO	Participants									Total Yes
	1	2	3	4	5	6	7	8	9	
In the past, if you have participated in previous RPD meetings, were you able to apply the information obtained in any of the following activities?	N/A	yes	N/A	N/A	N/A	N/A	N/A	N/A	yes	2
Design/reform policies or programs		yes							yes	2
Design/implement projects									yes	1
Request other countries' cooperation		yes							yes	2
Request IDB or other donor's technical or financial assist.									yes	1

Indicate YES or NO	Participants									Total Yes
	1	2	3	4	5	6	7	8	9	
In the future, do you think you might use the information obtained through the meeting in any of the following activities?	yes	yes	yes	yes	yes	yes	yes	yes	yes	100%
Design/reform policies or programs		yes	yes		yes	yes	yes	yes	yes	78%
Design/implement projects					yes	yes	yes	yes	yes	44%
Request other countries' cooperation	yes		yes			yes	yes	yes	yes	56%
Request IDB or other donor's technical or financial assist.	yes	yes	yes	yes		yes	yes	yes	yes	89%

Conference. Making Growth Happen: Implementing Policies for Competitive Industries. October, 2013, World Bank, Washington DC, US

The results of the project were presented in this policy oriented conference in Washington DC.

This Conference, organized by the Competitive Industries Global Practice at the World Bank, provided a venue for discussions about the latest in the “how” of growth and competitiveness, with an emphasis on local context and learning by doing. A number of senior World Bank Group clients and recognized international thought leaders attended the Conference sharing their experiences and views. The conference was keynoted by Joseph Stiglitz. Among senior officials, were Shri Arun Maira, Member of the Planning Commission of India; Patrick J. Achi, Minister of Economic Infrastructure from Cote d'Ivoire; Mugo Kibati, Head of Kenya's Vision 2030; and Laura Alfaro, former Minister of Planning and Policy from

Costa Rica. Eminent academics, such as Nicholas Bloom, Ha-Joon Chang, JP Faguet, Mushtaq Khan, Mariana Mazzucato, Rohini Pande, John van Reenen, Charles Sabel, and Liu Xielin shared their latest thinking. Also sharing their perspectives were representatives of the private sector, among them Fadi Ghandour, Founder and Vice Chairman of Aramex; R. J. Lino, Director of Indonesia's Port Corporation (Pelindo II); Jose Augusto Coelho Fernandes, Executive Director, Policies and Strategies, National Confederation of Industry from Brazil; and Guillermo Luz, Private Sector Co-Chair, National Council for Competitiveness in the Philippines.

8. Overall Assessment and Recommendations

The project had generated output that made an important contribution both to academics and policymakers in the region.

The project generated knowledge in an area where research is very scarce worldwide, i.e. the determinants of innovation in services and the links between innovation and productivity in services; moreover it generated unique evidence for developing countries where the research on this topic is almost inexistent.

We believe that the policy impacts of the project were maximized through a unique combination and interaction between academics, IDB officials in charge of negotiating the implementation of IDB-funded innovation programs in LAC, and policy makers and practitioners. It is very rare to have the opportunity of reuniting individuals coming from these different backgrounds to discuss evidence and policy issues, and the project fulfilled this objective.

Probably this is one of the main lessons of the project. To maximize the policy impact we need the interaction of 3 types of actors: researchers, program-funding agencies (like the IDB), and public officials.

The project had also important impacts in terms of capacity building and network formation in a field (innovation) where there is a very small number of researchers in Latin America and the Caribbean.

The creation of capacities was an explicit goal of the project. We explicitly encouraged researchers to follow rigorous process during their research and in the process of publication of research outputs. It was also explicitly encouraged the interaction with international researchers and policymakers in the field in different events.

Coordinators must actively encourage capacity building and network formation, and this should not be an indirect result of the project. This is another lesson of the project.

In terms of the impact of the project on the development of the region, it is important to begin acknowledging that to accelerate economic development and close the per capita income gap with industrialized countries, policies that promote significant productivity are needed. A typical Latin American country would have been able to increase its per capita income by 54% from 1960 if productivity would have grown at rates in tandem with the rest of the world. However, not all sectors are equal. Productivity growth is higher in agriculture compared to other sectors in LAC, although still below the world average. Manufacturing lags well behind agriculture and services lie even further behind in terms of productivity growth. Therefore, the low productivity in services is one of the main problems in the region.

This research project showed that innovation is one of the factors behind productivity in services, and it also contributed to understanding which factors influence service innovation in the region. This message was transmitted clearly to policymakers and IDB officials that have important responsibilities in the definition of innovation policies and programs in LAC, therefore we expect the project to have impacts on the development of the region.