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Knowledge for Development: the IDB's Impact in the Region

Leopoldo Avellán
Claudia Calderón
Giulia Lotti
Z'leste Wanner

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Giulia Lotti | glotti@iadb.org

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Abstract

By analyzing a novel dataset on publications by the Inter-American Development Bank (IDB), we shed light on the extent to which the knowledge production of a multilateral development bank can reach its beneficiaries. We find that IDB publications are downloaded mostly in the American continent, with Peru, Colombia, the United States and Mexico leading the ranking in 2020. Moreover, during the COVID-19 pandemic downloads of IDB publications increased, both in the world and in Latin America and the Caribbean. Some characteristics of publications are significantly associated with higher numbers of downloads, such as the language of publications: documents in at least two languages or in Spanish only are downloaded more often than documents in English only, suggesting that it is important to disseminate research in the language of the targeted audience. As for the online discussion on the IDB, we find that mentions of the IDB touch different sectors important for development (especially modernization of the state, health, labor markets and financial markets), and that they increase when a document is published.

Keywords: knowledge, multilateral development banks, research impact, social media, policymakers

JEL codes: O19

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1. Introduction

Multilateral Development Banks (MDBs)[1] exist to promote the economic and social progress of developing countries, through loans, grants, equity investments and other financial and non-financial products. They are an important source of external finance for governments not only by providing direct financial support to member countries (Avellán, Galindo and Lotti, 2020, 2021), but also by mobilizing capital from private creditors (Broccolini et al., 2020). Complementary to the provision of external financing is the production and communication of knowledge, the identification of development strategies and policy guidance. To better serve their clients in these tasks, MDBs are equipped with strong technical capabilities, years of experience, and local knowledge that can benefit recipient countries (Wang, 2017). Their knowledge generation activities go beyond organizing seminars and conferences that contribute to the development policy debate, and includes publishing books, papers, reports and blogs aimed at policy advice, and operational knowledge to inform internal decisions. The knowledge production of these institutions is well recognized, to the point that while in 1996 it was the World Bank (WB) that was rebranded as the "Knowledge Bank" by then President James Wolfensohn (Ravallion, 2016), the function of "Knowledge Bank" was later recognized to Regional Development Banks (Calvo, 2002) and MDBs overall (Ying, 2019). In this paper, we want to assess the extent to which this knowledge creation reaches the public and understand which channels are better for disseminating knowledge.

Knowledge has been traditionally thought by economists as a public good (Arrow, 1962; Aghion & Jaravles, 2015), as it is: (i) nonrival -there is a zero-marginal cost from an additional individual consuming the good, and the good can be consumed without being depleted-, and (ii) nonexcludable -no one can be excluded from consuming the good- (Stiglitz, 1999; Long & Wolley, 2009). When goods are nonrival or nonexcludable, markets are likely to fail. For example, people might consume the good without paying (free-riding), leading to under-provision of the public good, as there is little incentive to produce a good whose price will tend to zero. The public policy implication that follows is that the state must play some role to boost the supply of such good (Stiglitz, 1999).

The benefits and costs of some public goods are limited geographically, and these are called local public goods. But most knowledge is a global public good. Scientific truths, for example, are universal, and their benefits extend across countries and regions. Knowledge for the development of countries has also been considered a global public good (Stiglitz, 1999).

Global public goods call for a collective action problem, where international cooperation will bring large benefits, as no country on its own can supply global public goods (Long & Wolley, 2009). The growth of knowledge is an interactive process that is inseparable from its diffusion (Arrow, 1962; Jovanovic & Roberts, 1989), and the international community, through institutions like the

[1] Multilateral development banks (MDBs) are international development finance institutions (DFIs) created by groups of countries and legally independent from them. They include global DFIs such as the World Bank (WB) Group, regional DFIs such as the Inter-American Development Bank (IDB) Group, and smaller regional groupings such as the Nordic Investment Bank (NIB) (Xu, Ren and Wu, 2019. See the Appendix I in Xu, Ren and Wu (2019) for a full list of DFIs.

WB (or other MDBs), has a collective responsibility for the creation and dissemination of this global public good, knowledge for development (Stiglitz, 1999).[2]

The question then becomes how relevant the knowledge produced by MDBs is, but analytic work on the impact of MDBs' research is very limited. According to a review of the WB research conducted by top development economists, the WB is one of the most important research centers in development economics (Banerjee et al., 2006). The authors selected a large random sample of research projects between 1998 and 2005 and assessed them. They found part of the work produced by the institution to be outstanding: from measuring poverty and inequality, to pioneering research on the organization and delivery of educational and health services and leading the collection of new data through the well-known Living Standards Measurement Surveys (jointly with the IDB) or as the World Development Indicators. They also however expressed some skepticism on the utility of a large fraction of papers for academics and policymakers.[3] Custer et al. (2015) agree on the importance of MDBs' knowledge. By surveying 6,750 policymakers and practitioners in 126 countries, they found that when development partners provide advice that is considered useful by authorities, they influence the agenda-setting process, and that MDBs have a clear performance edge in this.

Knowledge production takes different shapes in the work of multilaterals depending on its target audience. These formats include training and courses, policy dialogue and events, and in written form through publications such as books, technical notes, and working papers. With the rise in digital platforms, publications have increasingly shifted from being produced in print format to digital PDF documents available in online publication repositories (websites) that are free and open to access by the broad general public. This paper focuses on assessing the knowledge diffusion process in its most widespread and most recognized format, publications.

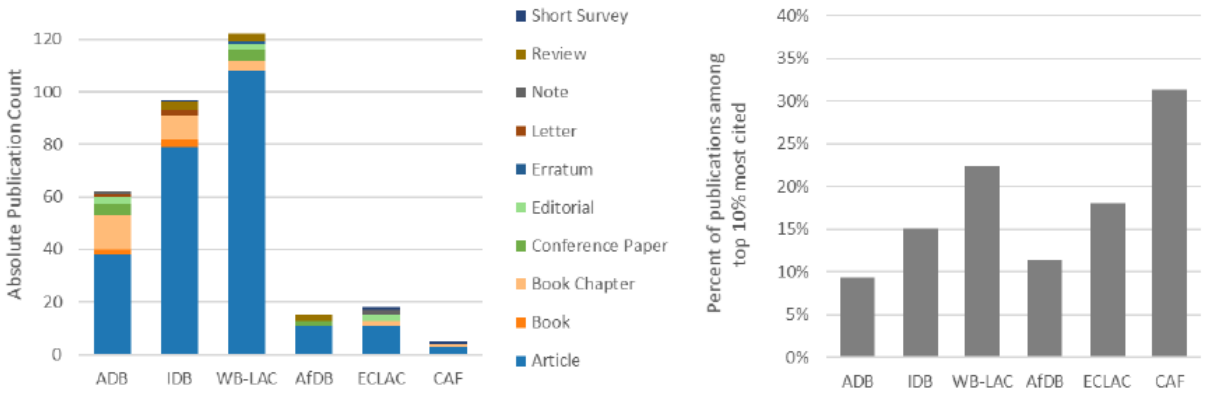
While Banerjee et al. (2006) and Custer et al. (2015) do not base their judgement on publication and citation counts, these are the most common measures of research performance. Publications in peer-reviewed journals are an indication of how the community of experts evaluates the quality of the work done. Citations are another important metric of the success of a knowledge product as they capture the relevance for a technical audience. Using publication count and citation data, Ravallion and Wagstaff (2012) find that from 1982 onwards, the WB published more journal articles in economics than any other development agency or university, with the only exception of Harvard. Most of WB articles and books, however, had not been cited. At the same time,

[2] More recently, the importance for international institutions like Multilateral Development Banks to produce knowledge has been stressed by other authors. In 2006, for example, 28 top development economists evaluated the research of the WB (Banerjee et al., 2006). They highlighted how the WB exists to promote development, which requires a base of knowledge, much of which must be generated by the Bank itself, as 'its research needs cannot be fully met by hiring in from the outside'. Even before, Gilbert, Powell and Vines (1999) and Squire (2000) favored the idea of in-house research capacity, arguing that knowledge about best-practice development is a global public good; as such, it requires a global provision. In-house production is needed given the difficulty to structure incentives so that outside research organization could deliver what the WB needs, and integrating research knowledge with WB operations would be very hard without in-house research capacity. Since MDBs aim at the same goals, these arguments can be easily generalized from the WB to the rest (Gilbert, Powell and Vines, 1999; Squire, 2000). Clemens and Kremer (2016) have also argued that the principal impact of the WB on nations' socio-economic development lies in its ability to influence policy rather than simply facilitate capital flows, which is also made possible by the data collection and knowledge production activities conducted by its staff.

[3] Ravallion (2016) agrees with the important role of the WB in supplying the public good of development knowledge but claims that the rhetoric of "knowledge bank" has not matched the reality: the WB should be, for example, more invested in aligning to client country needs and arguing more for well-informed policies.

researchers at the WB produced some of the most cited articles in several top economics journals. In a similar exercise, Elsevier (2017) assesses the impact and usage of IDB 2006-2016 knowledge products and compares them to 5 institutions with similar missions.[4] Among Scopus-indexed products, the absolute count of MDB knowledge artifacts that classify among the top 10% most cited worldwide is greater for the World Bank in Latin American and the Caribbean (WB-LAC), IDB and the Asian Development Bank (ADB).[5] In relative terms, 15% of the IDB articles are among the top 10% most cited worldwide, 22% for WB-LAC, 30% for the Development Bank of Latin America (CAF). However, as in Ravallion and Wagstaff (2012), Elsevier (2017) finds a high percentage of artifacts that were never cited.

Figure 1. Absolute Count of Publications among the Top 10% Most Cited Worldwide by Document Type (Left) and Percentage Representation of Publications among the Top 10% Most Cited Articles Worldwide (Right) for 2006-2016 Publications by each Comparator



Notes. ADB: Asian Development Bank; IDB: Inter-American Development Bank; WB-LAC: World Bank for Latin America and the Caribbean; AfDB: African Development Bank; ECLAC: the Economic Commission for Latin America and the Caribbean; CAF: Development Bank of Latin America. Source: Scopus and PlumAnalytics (Elsevier, 2017) and Office and Evaluation Oversight (OVE, 2019).

Nevertheless, publications in journals and citations can offer only an incomplete assessment of the quality and influence that a knowledge product can achieve. While being valuable measures of long-term impact, they are much less useful in the short run as the publication process is lengthy.[6] Even before being published in a peer-reviewed journal, cited or discussed, a knowledge product can be downloaded and possibly be used to learn more about a specific topic. That product could perhaps never be published and cited, but it can still influence the work of many, especially if the latter are not producers of knowledge themselves, but interested consumers.

[4] The institutions considered were the World Bank restricted to publications for Latin America and the Caribbean (WB-LAC), the Asian Development Bank (ADB), the African Development Bank (AfDB), the Economic Commission for Latin America and the Caribbean (ECLAC) and the CAF.
[5] Scopus is the world's largest abstract- and indexing database (Elsevier, 2017).
[6] One metric that seeks to bridge the gap or provide a measure of what could be considered medium-term impact is Altmetric, which tracks and reports on how a publication is gaining attention in online formats. Altmetrics are metrics and qualitative data that are complementary to traditional citations. They can include citations on Wikipedia, discussions on research blogs, mainstream media coverage, mentions on social networks, among others. For more see: https://www.altmetric.com/about-altmetrics/what-are-altmetrics/

To capture broad interest, we focus on a metric that relates to a wider public: downloads. For data restrictions our downloads analysis is limited to knowledge products of the major MDB in Latin America and the Caribbean, the IDB. While findings cannot be extrapolated to the rest of the MDBs, they offer an important insight on the ability of a development bank to supply a public good and reach interested audiences.

Thanks to a very granular data on IDB publications, we can analyze which factors are associated with more downloads. 65% of the downloads of IDB publications happen in Latin America and the Caribbean (LAC), with Peru and Colombia being the countries with the highest number of downloads in 2020. Moreover, publications in Spanish (only, or together with English) exhibit more downloads compared to publications in English only, suggesting that it is key to produce research in the language of the audience. The IDB produces different types of knowledge products, but "books" is the category with most downloads per publication. However, the IDB has a dissemination strategy that focuses on promoting more certain publications. Since we do not have precise data on marketing expenses, the analysis at the category level is biased by this omitted variable, as publications in some categories might be pushed more than others. Finally, during the Covid-19 pandemic downloads of IDB publications increased, both in the world and in Latin America and the Caribbean.

The detailed data on IDB publications allows us to also analyze if there is an association between IDB publications and online mentions of the IDB. In our estimations, we control not only for country and time fixed effects, but also for country-sector and country-time fixed effects, greatly diminishing the possibility of omitted variable bias and increasing the precision in estimating the effect of publishing a document on the digital conversation on the IDB. We find that when an IDB knowledge product is published, there is an increase in mentions of the IDB that make reference to a publication key word in social media.

The remaining of the paper is structured as follows. Sections 2 and 3 provide a description of the data used and of the empirical strategy, respectively. Section 4 presents the results. Section 5 presents robustness checks, section 6 discusses the limitations of this analysis, and section 76 concludes.

2. Data

For the purpose of this analysis, we use two novel datasets, which we complement with other information from the IDB.

2.1 Downloads

The first one is a dataset of downloads of knowledge products of the IDB developed by the Knowledge, Innovation, and Communication Department Information Services Unit (KIC/ISU) of the IDB. From this source we gather information on the downloads of knowledge products from the official IDB repository from January 17th, 2013 to December 31st, 2020. Hence, the measure of downloads available to use is a lower bound of the overall downloads of a given knowledge piece, since the same knowledge product could be also downloaded from another source outside

of the IDB repository.[7] As the dataset only reports downloads of publicly available documents since 2013, we discard from the analysis documents that were published before 2013 and restrict our sample to downloads of the 5,176 documents published in January 2013-December 2020.[8] This way we can observe the full life cycle of downloads for each document.

The IDB produces on average around 650 documents per year, mostly by authors in the Vice-Presidency for Sectors and Knowledge (VPS).[9] Documents vary in type, ranging from technical notes to working papers, monographs, books, etc. (Figure 2).[10]

Figure 2. Number of knowledge products by publication year, vice-presidency and type

Source: Authors' calculations based on IDB Downloads Database – January 17th, 2013-August 31st, 2020.

The dataset also provides information on the country where the download takes place, its date (month/year), the number and name of the authors and the IDB division that published the document. The total downloads reported in the dataset are 18,943,191, of which 65% take place

[7] A knowledge product of the IDB could also be published as a knowledge product from another institution (e.g. working papers that are co-authored by both IDB staff and staff from other institutions or written by IDB staff affiliated also with other institutions).

[8] For a complete description of the data cleaning process refer to Appendix 1.

[9] The IDB Group is formed by the IDB, IDB Invest and IDB Lab. The IDB is then divided in different departments under the Vice-Presidency for Countries (VCP), the Vice-Presidency for Sectors and Knowledge (VPS), the Vice-Presidency for Finance and Administration (VPC), and the Strategic Core (STC). For more information see: https://test-iadb.pantheonsite.io/en/about-us/how-are-we-organized

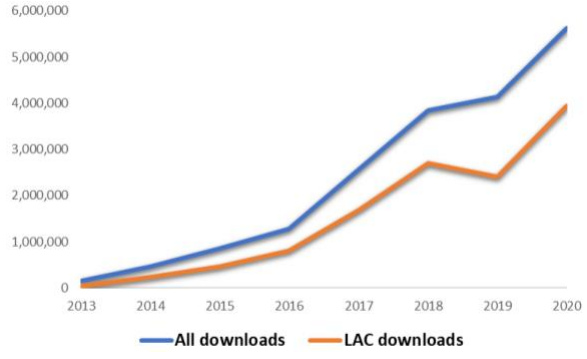
[10] Any IDB employee, from any department, can produce an IDB document after obtaining the required approvals for quality control. Types of publication vary. Annual Reports are reports published yearly to reflect the IDB work throughout the year and/or some development issue. They include the IDB official annual report, the Development in the Americas (DIA), the Development Effectiveness Overview (DEO) and other reports. Books can be the effort of multiple authors from different departments, but not necessarily. Among the most downloaded books in the sample period we find books on different topics, like "*Profesión: Profesor en América Latina ¿Por qué se perdió el prestigio docente y cómo recuperarlo?*", "Learning Better: Public Policy for Skills Development" or "Better Spending for Better Lives: How Latin America and the Caribbean Can Do More with Less". Catalogs and brochures include documents that inform on the Bank programs, results, goals, etc. and on relevant data or issues in LAC. Among the most downloaded we find "Orange Economy: Innovations you may not know were from Latin America and the Caribbean" or "School Green Areas". Discussion papers and policy briefs include documents shared with a community of specialist and policymakers, or that discuss a development policy issue, such as "International Case Studies of Smart Cities: Singapore, Republic of Singapore". Magazines, journals and newsletters include period publications, such as "The future of work in Latin America and the Caribbean: A Great Opportunity for The Region? (interactive version)". Monographs are briefs on a single subject, usually less than 100 pages, such as "Social Services for Digital Citizens: Opportunities for Latin America and the Caribbean". Technical notes include a wide range of sector notes, documentation of lessons learned, case studies, etc. Examples are "How to Select an Instrument for Assessing Student Learning" and "*Generación de Electricidad a Partir de Biogás Capturado de Residuos Sólidos Urbanos: Un Análisis Teórico-Práctico*". Sometimes databases are also produced by IDB employees, such as "The Database of Political Institutions 2017". Finally, working papers are documents that disseminate research and often aim at publication in peer-reviewed journals, such as "*La carga de la vivienda de interés social: Comparación entre hogares de la periferia y del centro en ciudades de Brasil, Colombia y México*". For a detailed description of each type of publication see the Annex 2.

in a country in Latin America and the Caribbean (LAC), indicating that IDB publications get the most attention from its client countries. As shown in Figure 3, the number of downloads of IDB products increased quite steadily since 2013, also reflecting the fact that the publications that we observe increased over time. Panel B shows in which months downloads occur most often: each point represents the sum of downloads in a specific month between 2013 and 2020. It is very interesting to note how the number of downloads increases steadily from January until November, at which point it reaches a peak.[11] In December instead, the number of downloads falls dramatically. This is not explained by a bunching of publications in select months, however it could be partly explained by the lack of promotional activity during the holiday months, when communication efforts around IDB publications are slowed substantially in response to decreased audience attention to this kind of content.[12]

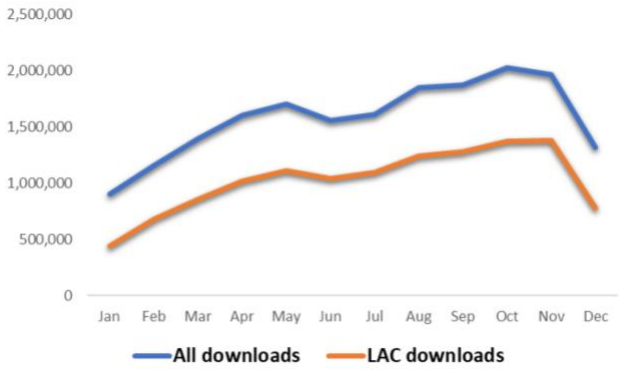
As further support to the utility of IDB publications to its client countries, we notice a marked increase in interest in IDB publications when the IDB's content is responsive to the current context and provides relevant, timely and actionable information, as happened during the Covid-19 pandemic. Panels C-D compare the monthly downloads in 2019 and 2020 across the world and in LAC, respectively. As the figures show very clearly, downloads decreased in the first months of 2020 compared to 2019, but starting in April they increased significantly, indicating that during the pandemic IDB documents raised more interest. Moreover, the documents that were most downloaded were precisely documents with policy recommendations on how to tackle the pandemic crisis.

Figure 34. Downloads Trend

Panel A. All and LAC Downloads by year, 2013-20



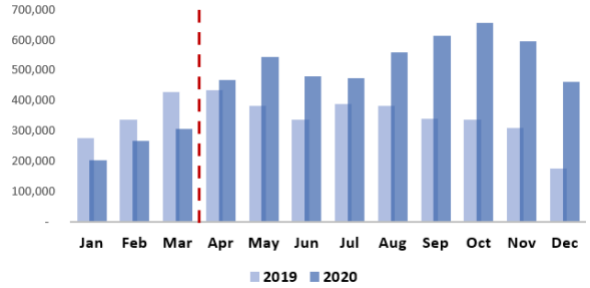
Panel B. All and LAC Downloads by month, 2013-20



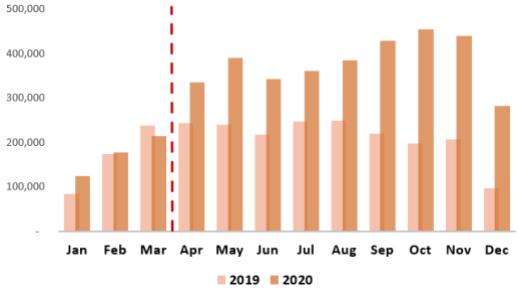
[11] Even though the number of publications reaches its peak in December, the number of downloads per publication is at its minimum in December and January.

[12] It could be partly explained by the migration in the collection of downloads data that happened in December 2017/January 2018 or by the cyber-attacks in September/October 2019, but not fully. Even when we try to control for the migration of the downloads collection in December 2017/January 2018 by discarding all the information on downloads between February 2017 and January 2018, we still observe that the number of downloads per publication reaches its minimum in December and January.

Panel C. All Downloads by month, 2019-2020



Panel D. LAC downloads by month, 2019-2020



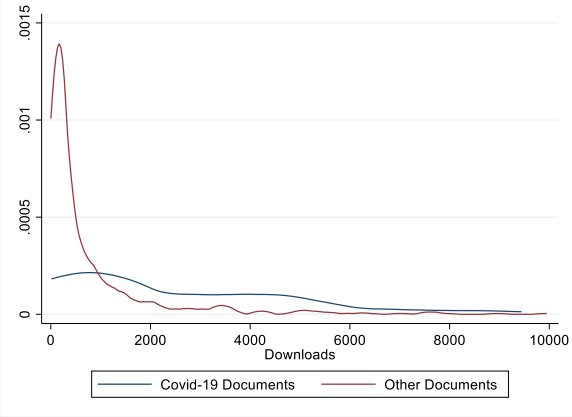
Source: IDB Downloads Database – January 17th, 2013-December 31st, 2020.

Of the 778 documents published in 2020, 103 (13%) were on Covid-19. Despite being a minority, the number of downloads per publication that they received was much greater compared to downloads of documents unrelated to Covid-19, with the median document on Covid-19 being downloaded 2,244 times in 2020, and the median document on another topic 282 times. Fig. 4, panel A shows kernel estimates of the probability density functions of downloads for knowledge products on Covid-19 (blue line) and of downloads of other knowledge products (red line). Both are leptokurtic distributions with heavy tails, but the kurtosis for downloads of products not focused on Covid-19 is much greater (i.e. outliers are more numerous). Both are positively (right-) skewed, but the distribution of downloads for products on topics other than Covid-19 exhibits a higher peak at lower values of downloads. As panel B shows, the cumulative distribution function of downloads of documents on Covid-19 has first order stochastic dominance over downloads of documents on other topics, since for any cumulative probability value, it gives a higher number of downloads. In sum, documents focused on Covid-19 raised much more interest in terms of downloads.

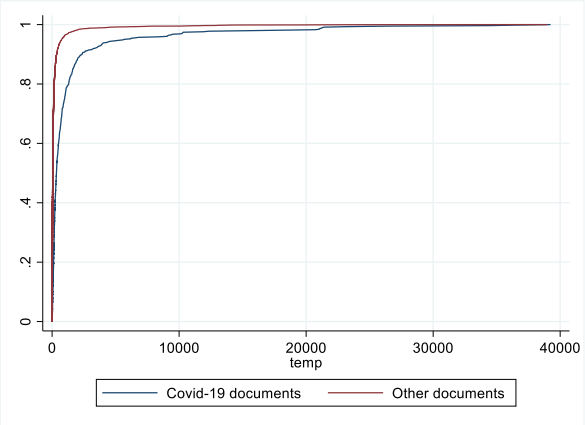
Covid-19 also changed slightly the composition of the audiences subscribed to receive information about IDB knowledge products. The IDB gathers information about who is downloading when it comes to their profession, to understand more about the reach of the IDB across different audiences. Of the self-identified audiences who subscribed to receive information about IDB knowledge products between March 2018 and December 2020, 26% work in the Private Sector, 20% in Academia, 19% in Government, 12% in Civil Society, 3% in Research Centers, 2% in Multilateral Organizations, and 2% in Media.[13] Since the Covid-19 shock, there was a small decline in the percentage subscribers from academia (19.6% in 2020 vs 21% in 2019) among those who self-report their role, but an increase in the percentage subscribers from civil society (15% in 2020 vs 12.6% in 2019) and from the government (15.4% in 2020 vs 14.5% in 2019).

Figure 4. 2020 Downloads Distributions

Panel A. Kernel Density Estimation of Probability Functions



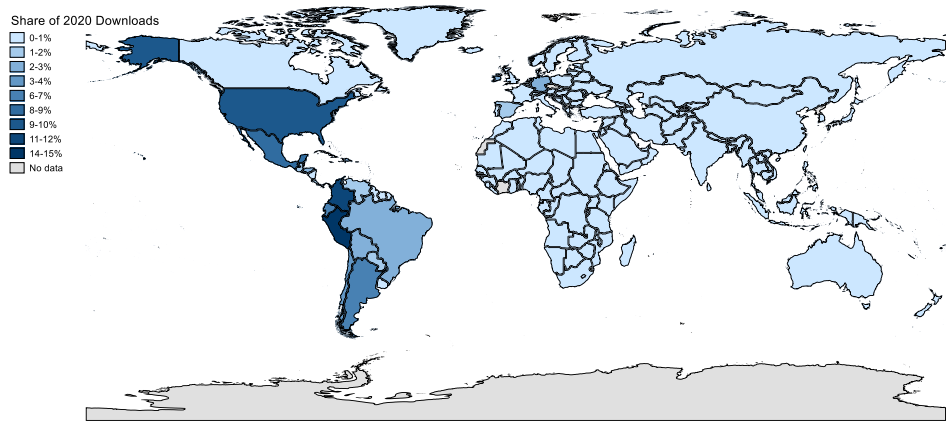
Panel B. Cumulative Distribution Functions



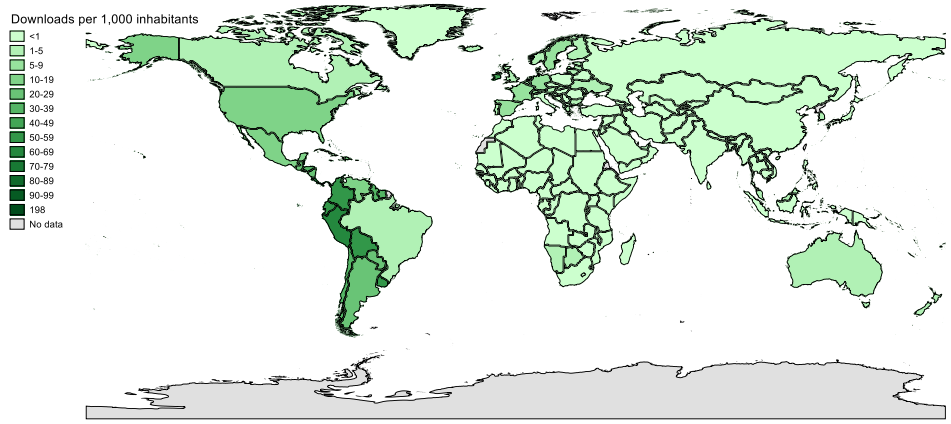
Notes: Panel A reports kernel density estimations of probability functions of 2020 downloads of documents published in 2020 on Covid-19 (blue line) and of 2020 downloads of documents published in 2020 on other topics (red line). Panel B reports the cumulative distribution functions of 2020 downloads of documents published in 2020 on Covid-19 (blue line) and of 2020 downloads of documents published in 2020 on other topics (red line).
Source: IDB Downloads Database – 2020.

We can further disaggregate this information at the country level. If we focus, for example, on the number of 2020 downloads of the documents in our sample and we look at the country where the download takes place, we see that the majority occurs in LAC and the United States: 14.9% of the 2020 downloads of IDB publications takes place in Peru, 11.8% in Colombia, 9.7% in USA, 8.5% in Mexico, 6.4% in Argentina and 6% in Ecuador. At some distance we find 3.5% of downloads in Chile, 2.8% in Ireland, 2.7% in Germany, 2.5% in Bolivia and Brazil, 2.3% in Dominican Republic, 2.2% in Honduras, 1.7% in El Salvador and Guatemala (Figure 5, panel A). The picture changes if we analyze instead the number of publications normalizing by population (Figure 5, panel B). The top 3 countries in terms of number of publications per 1,000 inhabitants are all in the Caribbean, with Barbados exhibiting 198 downloads per 1,000 inhabitants, followed at distance by Trinidad and Tobago (92) and Bahamas (88). The list continues with Costa Rica (68), Saint Kitts and Nevis (62), Peru (60), Panama (58), Uruguay (58), Bolivia (56), Ecuador and Colombia (51), Antigua (46), Ireland (45), Turk and Caicos Islands (44), Cayman Island (43), Grenada (43), El Salvador and Guyana (39), Suriname (38), Jamaica (36) and Chile (33).

Figure 56. 2020 Downloads by Country
Panel A



Panel B

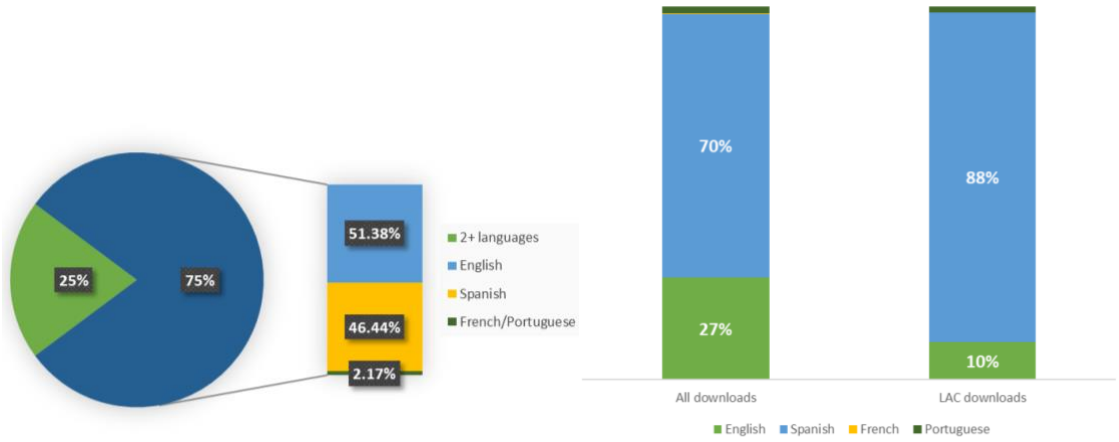


Notes: the map above plots the share of 2020 downloads of IDB publications in 2013-2020 by country of origin, while the map below plots the number of 2020 downloads per 1,000 inhabitants (where population is measured in 2019 for lack of 2020 data).
Source: Authors' calculations based on IDB Downloads Database and World Development Indicators.

We now examine whether documents published in a certain language are downloaded more often. We have this information only for documents published and downloaded until August 21st, 2020. 75% of the IDB documents published between 2013 and August 2020 for which we know the language of publication, are published in one language only.[14] Of these, 51.4% in English, 46.4% in Spanish, and the remaining 2.2% in Portuguese or French. Most documents downloaded are written in Spanish, and this is even more so in LAC. Only a minority of documents are downloaded in French or Portuguese, reflecting the lower number of publications in these languages (Figure 6).

[14] For 55 publications only the language is missing.

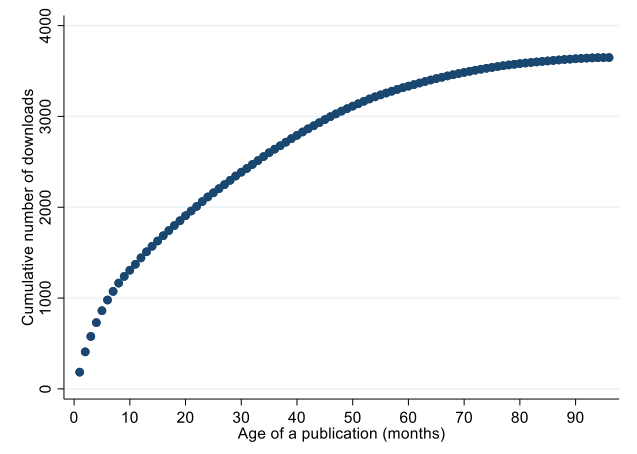
Figure 67. IDB Publications by Language and Downloads of IDB Publications by Language



Notes: IDB publications in January 2013-August 2020 by language and downloads of IDB publications by language.
Source: Authors' calculations based on IDB Downloads Database.

Figure 7 depicts the average cumulative number of downloads of IDB publications against months from the publication date. We find that the cumulative number of publications is a concave function of the age of the publication: documents are more likely to be downloaded in the beginning of their life cycle, but the number of downloads seems to reach a plateau after 60-70 months from the publication date. This suggests on the one hand the presence of a "novelty effect", where a new publication raises most of the interest, but loses appeal or relevancy over time, and on the other hand reflects a marketing strategy where efforts are concentrated around the time of publication.

Figure 7. Downloads Life Cycle



Notes: the figure plots the average cumulative number of downloads of IDB publications in 2020 against months from the publication date.
Source: Authors' calculations based on IDB Downloads Database.

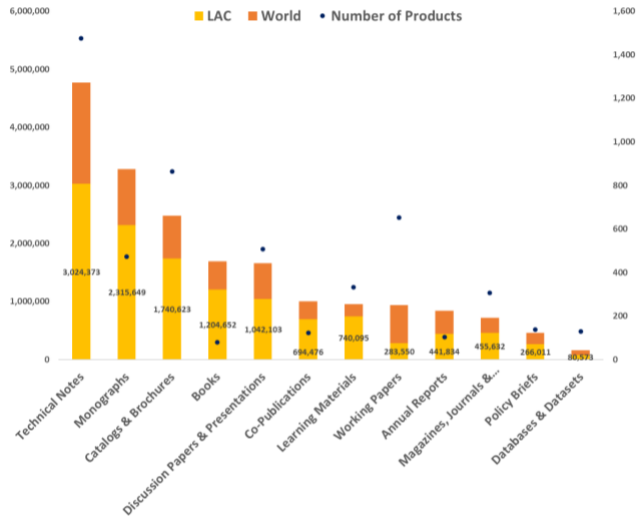
We can also explore which types of documents have the widest reach in terms of downloads. In Figure 8, Panel A, we plot on the primary y axis the number of total downloads by document type, in the world and in LAC; the number of products by type is represented by the blue dot and is shown in the secondary y axis. Most of the documents produced are in the form of a technical note,[15] which also happen to be the most downloaded document in the world and in the LAC region. Monographs are the second most downloaded document, followed by catalogs and brochures, books, discussion papers and presentations, and co-publications. Despite the large proliferation of working papers (12.5% of all publications in 2013-2020), the latter does not seem to obtain an equally large number of downloads. That is, number of products and downloads do not necessarily go by hand. The number of publication downloads by type divided by the number of total publications by type varies widely by document type: books are by far the most influential document produced (Figure 8, Panel B). The picture seems grim for working papers: despite being the most likely documents to be submitted to a peer-reviewed journal for publication, they appear among the least downloaded categories. It could be argued that this could be due to different reasons: first, it might reflect that working papers, given their higher technical content, are directed to a more specialized and narrower audience from the general public; second, working papers are more likely to exist in different working paper series for which we cannot observe downloads, and once they are published in a peer-reviewed journal, they are more likely to be downloaded from the journal itself; that is, the number of downloads we observe for working papers is certainly a lower bound of the true number, while this is not true for other types of documents. Moreover, the number of downloads by publication type can also be misleading since the estimation suffers from omitted variable bias, as we do not have data on IDB marketing activities, and the IDB could be making more efforts to disseminate certain types of publications compared to others. Indeed, the IDB dissemination strategy promotes more aggressively selected publications through traditional press outreach, in addition to paid digital media advertising on Google and social media channels that share the publication with targeted audiences.

However, some of the confounding factors that we cannot observe will take place only with a delay. For example, although it is true that working papers are likely to be published in journals, this will not happen immediately, as publication processes in a journal take time. Even though communication campaigns are likely to affect the number of downloads per publication, this will typically happen with a lag. To remove these confounding factors, we re-conduct the analysis but limit the timeframe in which we observe downloads to 3 months after publication. As can be seen in Figure A1, the ranking of publications is not largely affected, with books, co-publications, annual reports and monographs still in the top-4 in terms of number of downloads, and working paper and databases at the bottom of the list. Part of the explanation for the lower number of downloads of working papers and databases might also be linked to the language in which they are published, as both categories exhibit the largest percentage of publications in English only (84% and 62%, respectively). In the next sections we will disentangle the effects of language from the effect of publication type.

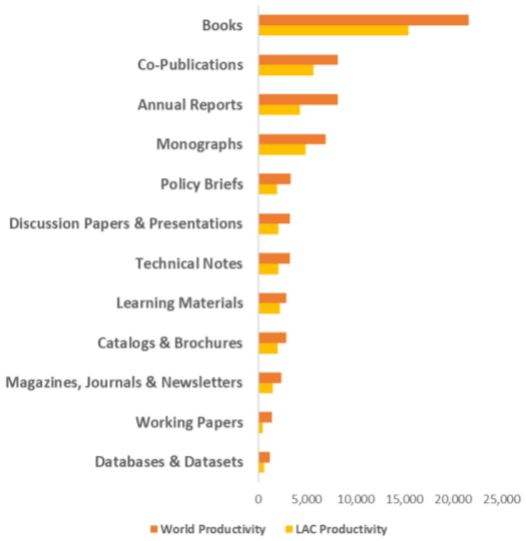
[15] 1,301 technical notes were published and downloaded at least once in January 2013-August 2020.

Figure 89. Downloads in the world and in LAC, number of products and number of downloads by product and document type

Panel A. Downloads and Products Count by Type



Panel B. Average Number of Downloads per Poduct by Type



Notes: Panel A plots the total number of downloads in LAC (yellow) and in the world (orange) by document type on the primary y-axis, the total number of products (blue dots) on the secondary y-axis. Panel B represents the number of downloads per product by document type in the world (orange) and in LAC (yellow). The information refers to all IDB publications in 2013-2020.
Source: Authors' calculations based on IDB Downloads Database.

Finally, we classify knowledge products according to their scope in 3 categories: regional, when the document tackles an issue related to the region as a whole; country-specific, when the document tackles an issue of a specific country; other, when the document discusses a corporate subject or a sectoral issue in more general terms.[16] 28% of the knowledge products are considered regional, 35% country-specific and 37% other.

Summary statistics of the observable characteristics of the publications that will be analyzed in more detail[17] are reported in Table A1.

[16] This classification is based on the words that form the title. If the title contains the name of a country or city in LAC it is considered country-specific (e.g. "A Cycle-Adjusted Fiscal Rule for Sustainable and More Equitable Growth in Argentina"); if the title contains words such as "Latin America and the Caribbean", its acronyms, subregions, it is a Development in the Americas (DIA) flagship publication or a macroeconomic report, it is considered regional (e.g. "2020 Latin American and Caribbean Macroeconomic Report: Policies to Fight the Pandemic"; otherwise it is considered related to a corporate or sectoral issue (e.g. "Evaluability Review of Bank Projects", Addressing Climate Change within Disaster Risk Management: A Practical Guide for IDB Project Preparation).
[17] The ones published between January 2013 and August 2020, since we do not have information on the language of publications after that.

2.2 IDB Publications and Social Media

The IDB and the WB are both referenced on public tweets, blogs and digital news articles (public digital conversation) across different sectors in Latin American and the Caribbean. Health, labor markets, modernization of the state and social investment were the most mentioned sectors in terms of volume for both institutions, while citizen security and justice, and sustainable tourism were the sectors attracting the least attention (Figure 9).[18] Moreover, the public digital conversation referencing both institutions and health has increased significantly since March 2020 due to Covid-19 (Figure 10).

Figure 910. Mentions referencing a sector and the IDB or World Bank in public digital conversation from January 01, 2015 to July 31, 2020.

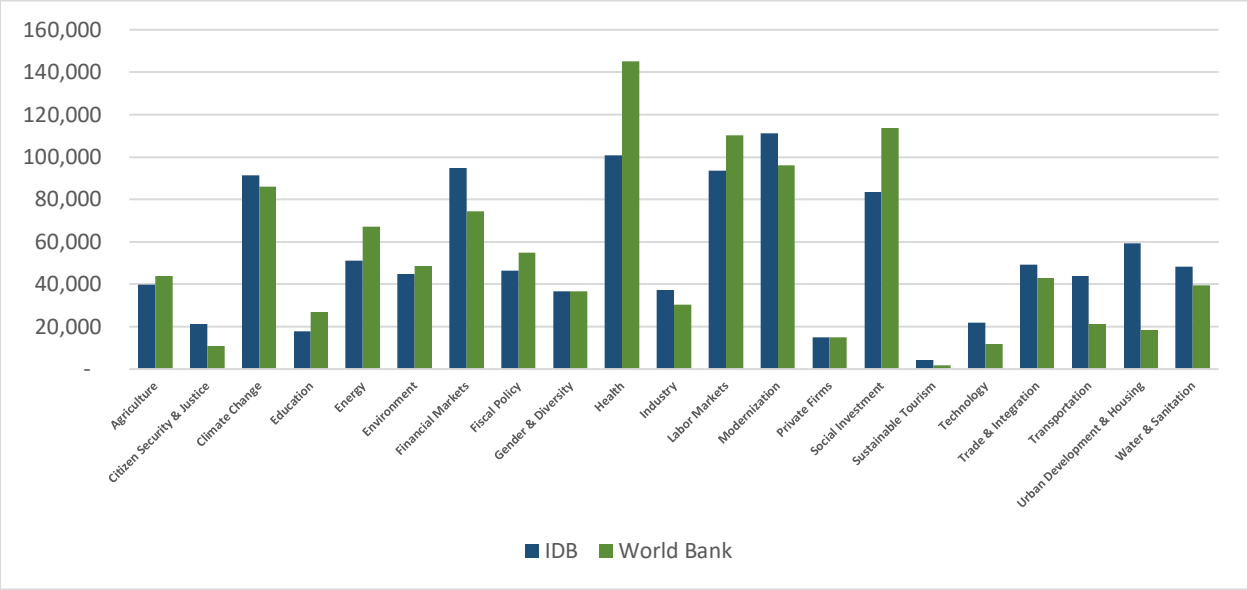
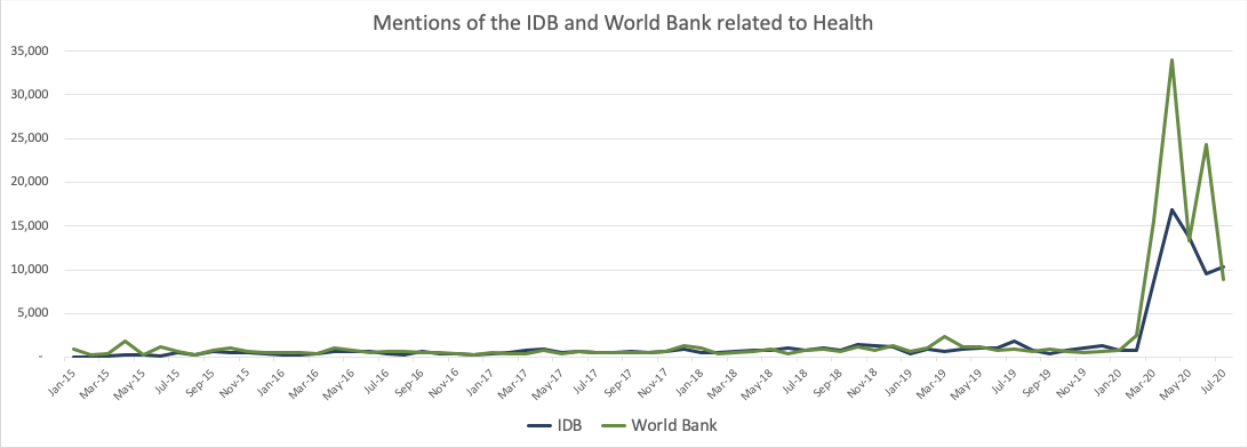


Figure 10. Mentions referencing the Health Sector and the IDB or World Bank in public digital conversation from January 01, 2015 to July 31, 2020.



[18] Keywords are mapped to the sectors according to a taxonomy aligned to IDB operations.

Source: Authors' calculations based on IDB database of public digital conversation captured using Brandwatch Consumer Insights.

Figure 11 shows the most popular hashtags and phrases used in the public digital conversation when mentioning the IDB. The public digital conversation referencing the IDB focuses on the institution's work across and for the region (e.g. "America Latina y el Caribe, #amlat), its loans and projects and the amount of money invested (e.g. "millones de dólares"), its different initiatives and mission (e.g. #equidadtotal, #mejorandovidas) and its work across different sectors (e.g. #ciudades, #salud).

Figure 11. Most popular hashtags and phrases used in public digital conversation when mentioning the IDB from January 01, 2015 to July 31, 2020.

Source: Authors' calculations based on IDB database of public digital conversation captured using Brandwatch Consumer Insights.

The second dataset includes IDB publications and online mentions referencing IDB publications on Twitter. This dataset is at the publication and at the mention level.

To explore the link between mentions of IDB publications on social media and IDB publications, we rectangularize this dataset at the sector-year-month level.[19] This way we can observe if there is an association between mentions of IDB publications on social media and IDB publications within the same sector across time. The sector of the publication is not available in the data, but we bypass this constraint and assign a sector to each publication by looking for keywords mapped to the IDB sectors in a publication's full text and counting how many times a sector-related keyword appears.[20]

Once we aggregate the data at the sector-month-year level, we see that each month a sector is mentioned on average 29,217 times on Twitter. We also observe that each month there are on average 31 online mentions of IDB publications related to a certain sector. Finally, we indicate

[19] We cannot rectangularize the date at the country-sector-year-month level, as publications generally target users across countries and we cannot assign them to a specific country.

[20] Thus, if a publication references 20 health-related keywords, 15 agriculture-related keywords and 5 water and sanitation-related keywords, 50% of the publication is assigned to the health sector, 37.5% to the agriculture sector and 12.5% to the water and sanitation sector. Keywords are mapped to the sectors according to a taxonomy aligned to IDB operations. For keywords, the analysis looks up to six-grams. For example, the keyword "water supply" was mapped to the Water and Sanitation Sector, or "e-government" was mapped to Reform and Modernization of the State.

with a dummy equal to 1 all the sector-year-months where a new IDB knowledge product is published: as can be seen in Table 1, in 65% of the months, an IDB knowledge product related to a sector is published.

Table 1. Summary Statistics of Online Mentions and IDB Publications

Variable	***Obs.***	***Mean***	***Std. Dev.***	***Min***	***Max***
Online mentions of a sector	1,072	29,217.20	1,647,890	1,433	37,600,000
Online mentions of IDB publications	1,072	31.02	71.95	0	1,146
Dummy =1 if IDB publication in sector	1,072	0.65	0.48	0	1

Notes: the table presents the summary statistics of online mentions and IDB publications per sector-year-month in January 2015- July 2020.

3. Empirical Strategy

The aim of this paper is to have metrics of knowledge diffusion. Thanks to the rich dataset, we can approach this task from multiple angles.

3.1 Downloads

As far as downloads are concerned, we are interested in whether some publication characteristics are good predictors of either the number of total downloads or the number of downloads in the client countries. For this, we estimate a simple linear regression model through ordinary least squares (OLS):

$$y_i = \Sigma vp_i + \Sigma pub\ type_i + \Sigma lang_i + joint\ divisions_i + \Sigma scope_i + \#authors_i + IDB\ author_i + pub\ date_i + \varepsilon_i \quad (1)$$

where y_i is the number of total downloads in the world or the LAC regions in January 2013-August 2020 for each IDB publication *i*.

vp_i is the vice-presidency where the IDB employees authoring publication *i* work. The IDB Group comprises the IDB, which works with governments, IDB Invest, which serves the private sector, and IDB Lab, which tests innovative ways to enable more inclusive growth. The IDB in turn is organized into four Vice-Presidencies: the Strategic Core (STC), the Vice-Presidency for Countries (VPC), the Vice-Presidency for Sectors and Knowledge (VPS), and the Vice-Presidency for Finance and Administration (VPF). Of these, two (VPS and VPC) play key roles in knowledge generation. In VPS, the Research Department and the sector departments are in charge of producing sectoral knowledge to serve country needs, while the Knowledge Department focuses on developing learning strategies and disseminating knowledge. VPC country departments instead produce country-specific knowledge, channel country demands for knowledge, and hence influence the sector knowledge production and use sector knowledge in the dialogue with countries (OVE, 2019). Given the different roles of the Vice-Presidencies, not controlling for this observable variable would mean omitting an important factor.

$pub\ type_i$ is the type of publication (book, annual report, etc.). We select technical notes as omitted category for publication type. Controlling for the different categories of publication will shed more light on which types of publication are accessed in higher volumes and can help management strategize to have higher chances of reaching the public.

$lang_i$ are dummy variables indicating whether the publication is published in: i) English only, ii) Spanish only, iii) Portuguese or French only,[21] or iv) more than two languages. The omitted category is English-only publications. Having the publication language as part of the equation is key to clarify if writing or translating into a specific language is linked to stronger advantages in terms of downloads and can help direct strategic management efforts to raise the public's interest.

$joint\ divisions_i$ is a dummy equal to 1 if more than one IDB division is involved in producing the document. We include this because to test whether collaboration and sharing of efforts within the organization is associated with better results in terms of downloads.

$scope_i$ are dichotomous variables indicating whether the scope of the knowledge product is the entire LAC region, a specific country or neither. The inclusion of these variables is important to understand whether it is regional products or country-specific knowledge products that are more likely to be downloaded and can help management have a better picture of the dissemination of its knowledge production.

$\#\ authors_i$ are dummy variables indicating whether the document was published by one author only, 2-3 authors, 4-7 authors or more than 8. Controlling for the number of authors is another way that can help us test whether the projects that are more complex and require more authors receive more interest and downloads.

$IDB\ author_i$ is a dummy variable equal to 1 if IDB appears as the author, as for the case of the "Inter-American Development Bank Sustainability Report 2017: Global Reporting Initiative Annex" or the "Development Effectiveness Overview (DEO)". This can help us understand the differences in downloads when the authors' identity is disclosed as compared to official documents where only the name of the organization appears as author and the anonymity of the authors is preserved. Finally, we include $pub\ date_i$, the date of publication (month and year), as publications with different publication dates have different time windows in which downloads are observed. ε_i are heteroskedasticity-robust standard errors.

By estimating equation (1) we can have a first grasp of which factors are positively associated with raising more interest among the citizens in the region and the world.

3.2 IDB Publications and Social Media

We then assess whether IDB publications also have an overall influence on the dialogue in digital media. The hypothesis is that once an IDB document pertaining to a specific sector is published, this will be noted in social media and perhaps spur an overall conversation about a sector.

We estimate a sector fixed effects model with a lagged dependent variable:

[21] We do not consider French and Portuguese separate as they constitute very few observations.

$$y_{s,t} = y_{s,t-1} + pub_{s,t} + \alpha_s + \delta_t + \varepsilon_{s,t} \quad (2)$$

where $y_{s,t}$ are the total mentions of a sector *s* in a given year-month (time *t*). In a first analysis $y_{s,t}$ will only include mentions of IDB publications. Second, $y_{s,t}$ will include all mentions related to sector in the region. $pub_{s,t}$ is a dummy signaling if there is at least one IDB publication related to a sector in a year-month. α_s are sector fixed effects. δ_t are time (year-month) fixed effects. Standard errors $\varepsilon_{s,t}$ are clustered at the sector-level. As for equations 3a-3b, the presence of both a lagged dependent variable and sector fixed effects can introduce a bias in the estimated coefficients, which should be small given the long time series (65 periods).

Finally, we conduct an event analysis around the publication's date in a sector.

$$y_{s,t} = \sum_{k=-3}^{3} publication_{s,t+k} + \alpha_s + \delta_t + \varepsilon_{s,t} \quad (3)$$

where $publication_{cs,t}$ is a dummy equal to 1 if for sector *s* there is at least one IDB publication at time *t*. We also include 3 lags and leads of this variable to explore whether the effects of publications last in time and check whether increases in mentions were happening before the publication.

4. Results

4.1 Downloads

We start our analysis by exploring whether some publication characteristics are associated with larger downloads of a knowledge product. The estimated coefficients from equation (1) are reported in Figure 12 and Table A2. The results indicate that, once we condition on all observable characteristics, books, reports and monographs are significantly more likely to attract attention and be downloaded compared to technical notes. This is true both for overall downloads and downloads in the LAC region. Moreover, even when controlling for the language of publication, working papers and databases are less likely to be downloaded than technical notes, together with magazines, journals and newsletters, and learning materials.

Documents published in VPS and VPC are more likely to be downloaded than documents published in STC. These results could be expected since the two Vice-Presidencies are the ones overseeing the knowledge production and dissemination to serve country needs.

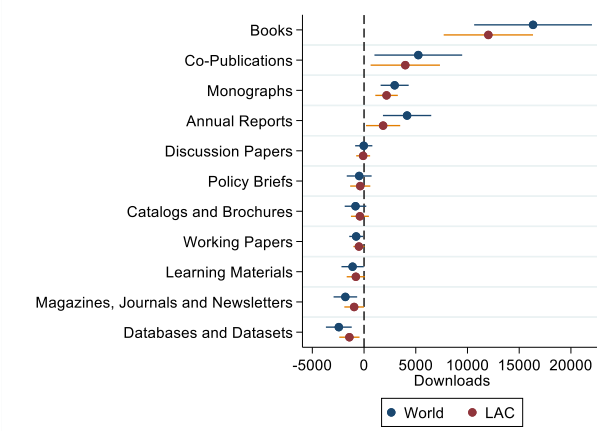
Panel C shows that, everything else constant, documents with a regional scope are more likely to be downloaded than documents that are country-specific or other documents (tackling corporate or general sectoral issues). Moreover, documents authored by the IDB are less likely to be downloaded than documents where authors are indicated by names of people (Panel D).[22] This could be because readers trust more documents produced by people who write their names when publishing, but we cannot know with certainty. Moreover, documents with 2 or 3 authors, or more than 8, are more downloaded than single-authored documents.

[22] 35% of publication with the IDB as an author are catalogues and brochures, 20% are magazines, journals and newsletters. Moreover, annual reports are the only category more likely to have IDB as an author. It is also worth mentioning that a good number of these publications are for internal use.

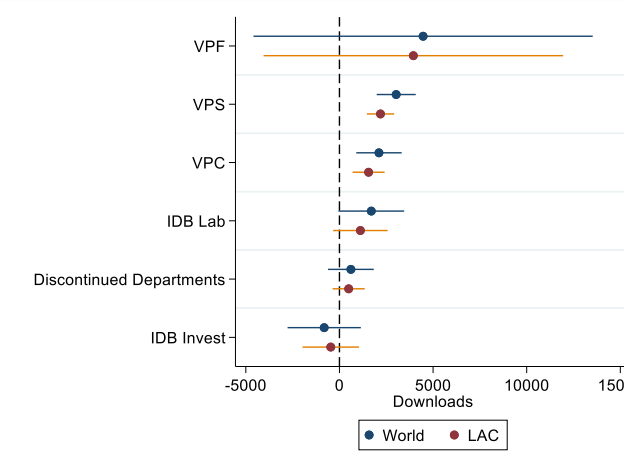
Documents published in two or more languages are more likely to be downloaded than documents published in English only (Panel E). This result can also mask the fact that only a subset of publications is translated in at least another language, and this usually the case for institutional publications for the IDB. For documents that are only in one language, however, where this

Figure 12. Publication Characteristics and Downloads

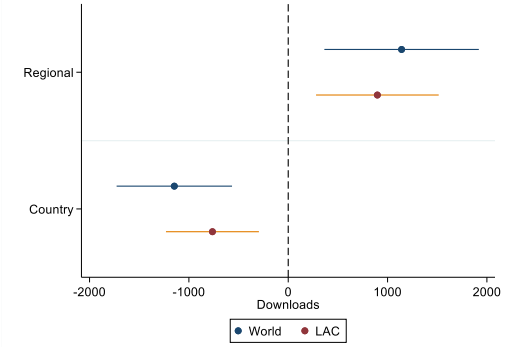
Panel A. Document type



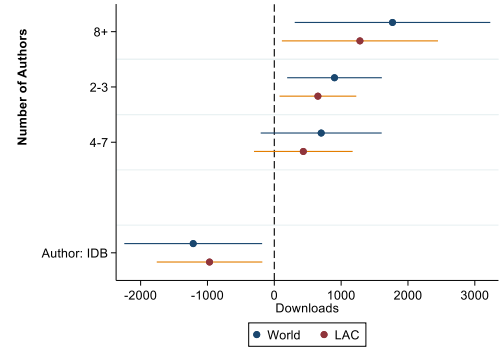
Panel B. Vice-Presidency



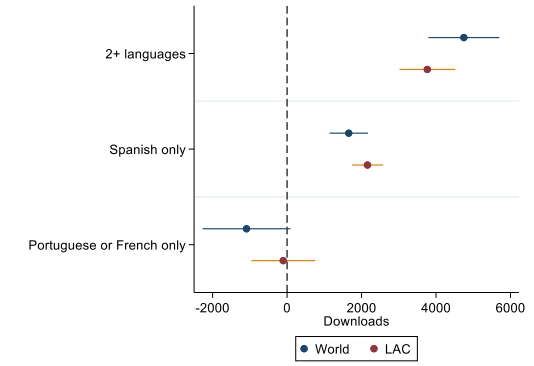
Panel C. Scope



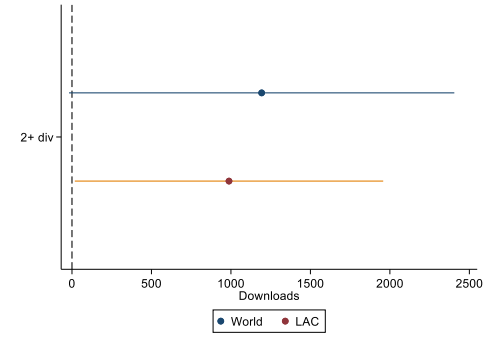
Panel D. Authors



Panel E. Language



Panel F. Divisions



Notes: the table presents the estimated coefficients of document type (Panel A), division (Panel B), number authors and a dummy equal to 1 if the IDB is the first author (Panel C), language (Panel D) from equation (1); confidence intervals are at 95% significance level. The information refers to all IDB publications in January 2013-August 2020. The omitted category for Panel A is technical notes; STC for Panel B; other (i.e. sectoral or corporate issue) for panel C; single-authored publications for Panel D; English-only publications for Panel E; one division only for Panel F.
VPF = Vice-Presidency for Finance and Administration; VPS = Vice-Presidency for Sectors and Knowledge; VPC = Vice-Presidency for Countries; STC = Strategic Core.
Source: Authors' calculations based on IDB Downloads Database.

confounding factor does not apply, we see that documents in Spanish only are more likely to be downloaded than documents in English only, and this is true for downloads across the world and in LAC.

Finally, whether one division only is involved in the publication or two divisions, does not seem to matter for downloads.

4.2 IDB Publications and Social Media

Results from estimating equation (2) are reported in Table 2. When there is at least one publication about a sector in a year-month, the mentions of IDB publications online increase by 10, signaling an interest on IDB publications in social media. Not too surprisingly, the publication of an IDB document does not manage to affect the overall conversation about a sector in social media (column 2).

The estimated coefficients from the event analysis in equation (3) are depicted in Figure 13 (and shown in more detail in Table A4). They give a similar picture to Table 4: once a document is published, online mentions of IDB publications increase by 10, while the overall conversation of a sector related to IDB publication does not experience any significant change.

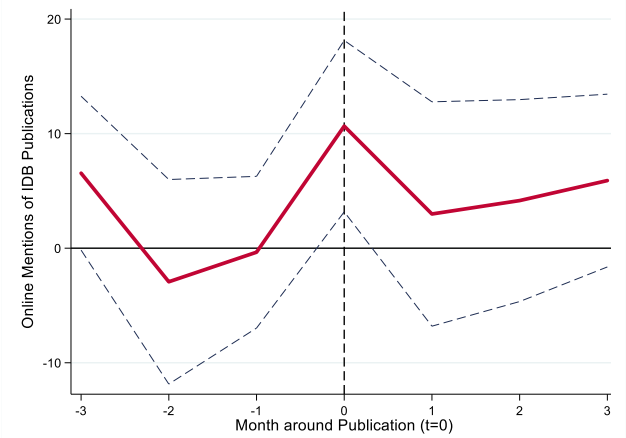
Table 2. Online Mentions and Publications

	(1) Online IDB Publication Mentions	(2) Online Mentions of a Sector
Online (IDB) Mentions $_{s,t-1}$	0.5088***	0.7466***
	(0.131)	(0.001)
Dummy =1 if IDB publication$_{s,t}$	10.1620**	88,558.0717
	(4.104)	(83,210.090)
Observations	1,056	1,056
R-squared	0.433	0.615
Sector FE	Yes	Yes
Year-month FE	Yes	Yes
Average Online Mentions	31.45	433,488
Average IDB Publications	0.649	0.649

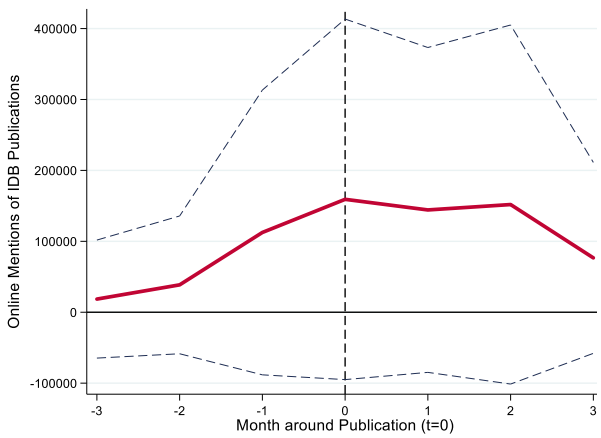
Notes. The table presents results from estimating equation (3) since January 2015 to July 2020.
Source: Authors' calculations based on IDB database of public digital conversation and IDB disbursements.

Figure 13. Event Analysis: IDB and total online mentions in sectors around month of IDB publication

Panel A. Online Mentions of IDB Publication around Publication



Panel B. Overall Online Mentions of a Sector around IDB Publication



Notes: the figure reports point estimates form estimating equation (5) and their 90% confidence intervals. The y axis represents the total mentions of IDB publications (Panel A) or overall online mentions of a sector (Panel B) around an IDB publication within sector-year-months. The data covers January 2015-July 2020.

5. Robustness Checks

We now test whether the event analyses presented are robust to different time windows. In the analysis we have estimated event analyses on how publications affect the online conversation of the IDB or the sector including 3 lags and leads of the event. To test whether results are sensitive to the time window chosen, we re-estimate equations (3) with 5 lags and leads instead. As can be observed in Figure A3, while the increase of IDB mentions is confirmed in the event analysis with 5 lags and leads (Panel A), there is no apparent relationship between online mentions of a sector and the IDB publication (Panel B), as found in our baseline results.

6. Limitations

There are limitations posed by these novel datasets that are worth noting. Publication downloads, like any other web traffic data source, present limitations in both their susceptibility to web traffic irregularities such as bugs and hacks, which can falsely represent clicks, and their dependency on promotional efforts, which raise the visibility of a product, and as a result increase clicks. Publication communication campaigns heavily influence, and in fact, are intended to drive publication downloads, and this is especially true with paid advertising efforts. However, marketing investment in publication promotion at the IDB is not applied evenly across publications or publication types. Not all publications receive the same investment in marketing in terms of resources spent or time promoted, and some none at all, and as a result, not all publications receive the same visibility that would enable and drive their downloads. Furthermore, investment in marketing was not, during the timeframe of this analysis, recorded in a systematic way that would allow for the isolation of this impact on downloads to understand organic interest in the document or document type.

In addition to driving clicks on content, paid advertising can also generate social media discussion around a topic or brand. This factor was not accounted for in the analysis to isolate the IDB's marketing impact on mentions of the IDB or IDB publications.

Finally, it is worth noting representativeness limitations in analyzing social media conversation. While it is true that it can provide a novel dataset to evaluate public discourse, it is not the exclusive channel where public debate takes place and therefore, there are limitations in barriers to access and user behaviors. Social media channels are increasingly restrictive in their privacy policies, limiting access to content shared on these platforms which is shared publicly, open and viewable by the general public. It does not allow for the capture and analysis of private discussions that occur on these channels and for that reason cannot be interpreted as fully representative of all activity on them. Furthermore, it is worth noting representativeness limitations in social media data that result from user behaviors in what they choose to share or represent on a given channel and how those patterns differ across platforms, for example, some users concentrate on certain types of content on certain social channels. Despite these limitations, social media has proven to provide a useful sample, or thermometer, of the public debate.

7. Conclusions

Knowledge for development is a public good. The international community has a collective responsibility for the production and dissemination of such global public good which would be under provisioned without active public support (Stiglitz, 1999). Multilateral development banks play an important role in the creation and dissemination of this knowledge. The extent to which this public good reaches its target audience has been subject of debate. Traditional exercises using publications in peer reviewed journals and citations can only offer an incomplete assessment of the quality and relevance of knowledge products within the scientific community. In this paper, we contribute to this discussion by analyzing a novel dataset on publications and social media interactions of the leading source of development financing for Latin America and the Caribbean (LAC), the Inter-American Development Bank (IDB). In particular, we have access to detailed data on downloads of IDB publications, and the online conversation in social media regarding the IDB and its publications.

First, we establish that interest is spread across different sectors beyond the scientific community like the private sector and government. Downloads of IDB publications extend worldwide but occur mainly America, with Peru, Colombia, the United States and Mexico being the countries where most downloads took place in 2020. Moreover, during the Covid-19 pandemic, interest towards IDB publications increased, as reflected in the surge of downloads, both in the world and in LAC. But not all publications receive the same attention, with some characteristics being significantly associated with higher numbers of downloads. Documents that are available in at least two languages, and even documents that are only in Spanish, are downloaded more often than documents in English only, emphasizing the importance to disseminate knowledge in the language of the targeted audience. As for the online discussion on the IDB, we find that mentions of the IDB touch different sectors important for development (especially modernization of the

state, health, labor markets and financial markets), and they increase when a document is published.

The findings show that the knowledge production of the IDB in the format of publications raises the interest of individuals in LAC and around the world, as reflected by downloads and the online conversation in social media and digital news. Further analysis into the impact of how the knowledge is consumed and used, whether in other knowledge products (citations) or operational work, and how that in turn impacts the public policy landscape on the topics raised in these knowledge products would be a beneficial next step. Complementary to that analysis would be the expansion of analysis to other knowledge formats and how the interplay of these formats (publications, events, courses, datasets) reaches audiences and impacts on desired outcomes. Furthermore, this analysis is limited to the knowledge creation and dissemination of the IDB only, and cannot be generalized to other MDBs. Further research on the role of the knowledge production by other MDBs would complement this analysis.

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Annex I. Data Appendix

Downloads ---There are 10,084 knowledge products that have been downloaded between January 2013 and December 2020 in the IDB repository. Since we can observe downloads only since 2013, we restrict the sample to knowledge products published since 2013, in order to be able to see the full life cycle of downloads. Moreover, there is one publication in the data that had twice the downloads of the most downloaded publications in the dataset; we consider it an outlier and discard it. We are left with 5,176 knowledge products. For the analysis of which observable characteristics influence downloads, we are constrained by the data to limit our sample to publications and downloads observed until August 31st, 2021, since it is only up to that date that we can observe the language of publication. For that analysis, we are left with 4,483 knowledge products.

Digital Conversation --- Tweets and online mentions are grouped in different sectors based on sector-related keywords, as shown in Figure A2. IDB disbursements are also grouped in sectors, but the two sector groupings do not overlap perfectly. For example, sectors such as “gender diversity issues” and “fiscal policy” that collet tweets and online mentions do not have a parallel in the disbursements dataset. The same applies to sectors such as “industry”, “microenterprises”, “other” and “regional integration”, available in the disbursements dataset but not in the digital conversation data. Hence, they are considered as missing in our analysis.

Annex II. IDB Knowledge Products

Publication Type	Description
Annual Reports	Annual Reports refer to reports published yearly, which provide information about the Bank's work and/or some development issue during a particular year. The Bank's Annual Reports include the Bank's official Annual Report, Development in the Americas, the Development Effectiveness Overview, as well as yearly reports related to OII, ICIM and other Bank Departments and funds
Books (commercial and non-commercial)	Commercial Books are manuscripts considered of commercial value which shall be submitted for publication (either online or in print format). Non-Commercial Books have limited commercial potential; however, their publication is deemed important for disseminating institutional messages or significant research findings.
Catalogs & Brochures	Catalogs & Brochures are designed to provide the public with information of Bank programs, results, goals or identity and on relevant data or issues in the region.
Co-publications	Co-publications are knowledge products developed and/or published by the Bank along with external organizations (such as other international organizations or academic institutions).
Databases & Datasets	Databases & Datasets include Databases, which are applications that combine back-end data with a front-end web-based interface where users can query and manipulate data; and, Datasets, which are raw data files, usually accompanying papers.
Discussion Papers	Discussion Papers include documents shared with a community of specialists and policy makers (both within the Bank and with external community members).
Learning Materials	Learning Materials include supporting documents for learning events, such as courses or workshops. Examples of Learning Materials are: study guides, class presentation and lectures, class reading materials, audiovisual media, simulations, case studies, methodological guidelines, teaching cases, etc. Learning materials should generally serve a well-defined pedagogical objective; notes or stand-alone slide presentations (such as PowerPoint) from a learning event or conference would in most cases not qualify as meeting such an objective. The audiences for these types of knowledge products are typically participants in Bank courses and others looking to expand their knowledge on their own.
Magazines, Journals & Newsletters	Magazines, Journals & Newsletters are periodic publications aimed at disseminating specialized information to a general audience. Examples of these knowledge products include IDEA and the INT/INTAL newsletter.
Monographs	Monographs are briefs on a single subject prepared for targeted audiences or specific purposes, such as presentations at events and policy meetings. They are knowledge products of usually less than 100 pages that are often designed, typeset, and printed in limited quantities, depending on their use.

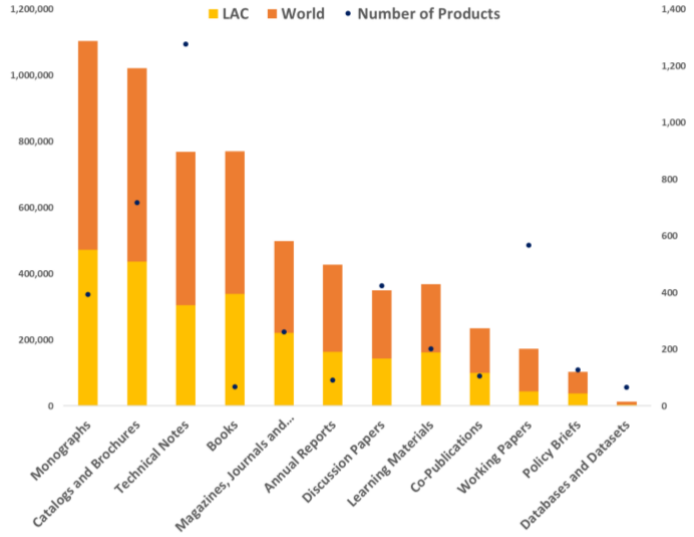
Policy Briefs	Policy Briefs discuss a particular development policy issue and outline courses of action, including specific policy recommendations. The research from which the Policy Brief is developed shall be produced under the auspices and/or leadership of the Bank (that is, the Policy Brief series shall not be a channel for disseminating the academic production of other institutions).
Technical Notes	Technical Notes include a wide range of sector notes, good practices, project and other evaluations/reviews, documentation of lessons learned, case studies, methodological notes, and other documents of a technical nature. Technical Notes' primary audiences are government officials and other development practitioners.
Working Papers	Working Papers are documents prepared for disseminating research and survey studies that, while conforming to rigorous research standards, need not be a final product, as their purpose is not only to inform but also to stimulate discussion. The audience for Working Papers is largely academic but may also include policymakers and private sector professionals. In keeping with the standards applied by most academic journals, Bank Working Papers shall not exceed 60 pages.

Source: IDB (2018)

Appendix Tables and Figures

Figure A1. Downloads in the world, in LAC, number of products and number of downloads by product and document type in the 3 months after publication

Panel A. Downloads and Products Count by Type



Panel B. Average Number of Downloads per Product by Type

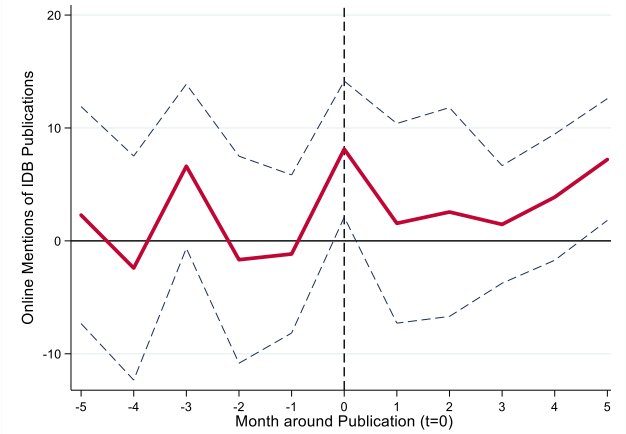
Notes: Panel A plots the total number of downloads in LAC (yellow) and in the world (orange) by document type on the primary y-axis, the total number of products (blue dots) on the secondary y-axis. Panel B represents the number of downloads per product by document type in the world (orange) and in LAC (yellow). The information refers to all IDB publications in 2013-2020 but in a timeframe limited to 3 months after publication.
Source: Authors' calculations based on IDB Downloads Database.

Figure A2. Sector Conversion

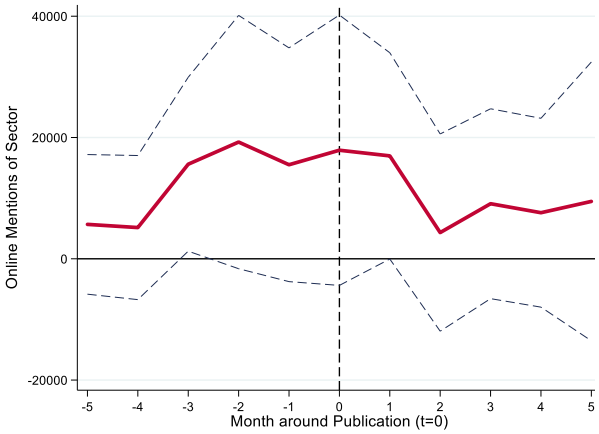
Disbursements Dataset		Digital Conversation Dataset	
Code	**Description**	**Description**	**Code Assigned**
AG	Agriculture and Rural Development	Agriculture and Rural Development	**AG**
AS	Water and Sanitation	Water and Sanitation	**AS**
DU	Urban Development and Housing	Urban Development and Housing	**DU**
ED	Education	Education	**ED**
EN	Energy	Energy	**EN**
FM	Financial Markets	Financial Markets	**FM**
IN	Industry		
IS	Social Investment	Social Investment	**IS**
ME	Microenterprises		
OT	Other		
PA	Environment and Natural Disasters	Climate Change and Environment	**PA**
PS	Private Sector Development	Private Firms	**PS**
RI	Regional Integration		
RM	Reform and Modernization of The State	Modernization of the State	**RM**
SA	Health	Health	**SA**
ST	Science and Technology	Innovation and Technology	**ST**
TD	Trade	Trade and Integration	**TD**
TR	Transportation	Transportation	**TR**
TU	Tourism	Sustainable Tourism	**TU**
		Gender and Diversity Issues	
		Fiscal Policy	

Figure A3. Event Analysis: IDB and total online mentions in sectors around month of IDB publication

Panel A. Online Mentions of IDB Publication around Publication



Panel B. Online Mentions of a Sector around IDB Publication



Notes: the table reports point estimates form estimating equation (5) with 5 lags and leads and their 90% confidence intervals. The y axis represents the total mentions of IDB publications (Panel A) or online mentions of a sector (Panel B) around an IDB publication within sector-year-months. The data covers January 2015-July 2020.

Table A1. Downloads Database – Summary Statistics

	Mean	Standard Deviation
Outcomes		
LAC Downloads	2405.093	7729.176
Downloads	3737.984	9712.666
Publication Type		
Annual Reports	0.021	0.145
Books	0.017	0.128
Catalogs and Brochures	0.162	0.368
Co-Publications	0.024	0.152
Databases and Datasets	0.025	0.156
Discussion Papers	0.096	0.294
Learning Materials	0.053	0.224
Magazines, Journals and Newsletters	0.061	0.239
Monographs	0.089	0.285
Policy Briefs	0.029	0.168
Technical Notes	0.290	0.454
Working Papers	0.133	0.340
Discontinued Departments	0.058	0.234
Vice-Presidency		
IDB Invest	0.028	0.164
IDB Lab	0.005	0.072
Missing Metadata	0.000	0.000
STC	0.099	0.298
VPC	0.099	0.299
VPF	0.002	0.045
VPS	0.709	0.454
Theme		
Country	0.354	0.478
Other	0.370	0.483
Regional	0.275	0.447
Authors		
IDB	0.124	0.330
Number_authors: 1	0.292	0.455
Number_authors: 2-3	0.407	0.491
Number_authors: 4-7	0.228	0.420
Number_authors: 8+	0.073	0.260
Language		
Language==2+	0.254	0.435
Language: English	0.383	0.486
language_n==es	0.347	0.476
language_n==other	0.016	0.125
Number of Divisions		
1 division	0.945	0.228
2+ divisions	0.055	0.228
Observations	4473	

Notes. The table summary statistics for variables estimated in equation (1). The information refers to all IDB publications in January 2013-August 2020. VPF = Presidency for Finance and Administration; VPS = Vice-Presidency for Sectors and Knowledge; VPC = Vice-Presidency for Countries; STC = Strategic Core. Source: Authors' calculations based on IDB Downloads Database.

Table A2. Publication Characteristics and Downloads

	(1) LAC Downloads	(2) Downloads
Publication Type		
Annual Reports	1,841.612**	4,182.860***
	(843.956)	(1,192.766)
Books	12,021.496***	16,335.107***
	(2,202.821)	(2,903.984)
Catalogs and Brochures	-391.152	-812.485
	(443.532)	(534.253)
Co-Publications	3,992.845**	5,235.887**
	(1,712.033)	(2,167.696)
Databases and Datasets	-1,451.471***	-2,331.860***
	(523.806)	(669.965)
Discussion Papers	-82.925	-31.226
	(343.688)	(424.190)
Learning Materials	-786.121*	-1,093.529**
	(451.548)	(548.907)
Magazines, Journals and Newsletters	-946.247*	-1,801.299***
	(501.845)	(601.941)
Monographs	2,223.177***	3,031.680***
	(558.545)	(696.214)
Policy Briefs	-369.119	-471.673
	(498.095)	(615.213)
Working Papers	-493.622*	-767.803**
	(274.285)	(342.236)
Vice-Presidency		
Discontinued Departments	539.690	678.319
	(434.341)	(614.272)
IDB Invest	-701.098	-1,154.436
	(780.815)	(1,009.502)
IDB Lab	829.630	1,306.144
	(769.207)	(927.984)
VPC	1,566.085***	2,139.515***
	(441.452)	(612.494)
VPF	3,333.690	3,658.429
	(4,173.075)	(4,742.665)
VPS	1,977.785***	2,743.183***
	(365.503)	(521.874)
Scope		
Country	-759.490***	-1,138.418***
	(238.657)	(296.501)
Regional	899.716***	1,160.436***
	(317.216)	(399.850)
Authors		
IDB	-819.521**	-1,033.955*
	(404.108)	(528.198)

Number of Authors = 2-3	654.367**	895.142**
	(291.587)	(359.650)
Number of Authors = 4-7	524.985	820.174*
	(376.354)	(462.048)
Number of Authors = 8+	1,349.954**	1,857.717**
	(589.871)	(737.572)
Language		
Language = 2+	3,804.611***	4,780.937***
	(379.506)	(484.782)
Language = Spanish	2,388.269***	1,967.503***
	(225.928)	(274.436)
Language = Portuguese or French only	363.650	-462.672
	(465.656)	(637.406)
Number of Divisions		
Number of Divisions = 2+ div	817.857*	966.028
	(491.552)	(615.369)
Publication Date FE	Yes	Yes
Observations	4,458	4,458
R-squared	0.168	0.194

Notes. The table presents results from estimating equation (1). The information refers to all IDB publications in January 2013-August 2020. The omitted categories are technical notes for publication type; STC for Vice-Presidency; other (i.e. sectoral or corporate issue) for scope; single-authored publications for number of authors; English-only publications for language; one division only for number of divisions. VPF = Vice-Presidency for Finance and Administration; VPS = Vice-Presidency for Sectors and Knowledge; VPC = Vice-Presidency for Countries; STC = Strategic Core.

Source: Authors' calculations based on IDB Downloads Database.

Table A3. Event Analysis: IDB and total online mentions in country-sectors around month of approval or closure of IDB loan

	(1) IDB Online Mentions	(2) IDB Online Mentions	(3) Online Mentions of a Sector	(4) Online Mentions of a Sector
$Approval_{t+3}$	0.257		3,442.051	
	(1.440)		(2,394.849)	
$Approval_{t+2}$	3.560		629.793	
	(3.725)		(716.327)	
$Approval_{t+1}$	6.005		2,048.320*	
	(5.431)		(1,091.870)	
$Approval_{t}$	7.559**		2,976.383**	
	(3.230)		(1,309.943)	
$Approval_{t-1}$	6.366*		920.539	
	(3.285)		(976.666)	
$Approval_{t-2}$	5.475		1,746.700*	
	(4.028)		(938.156)	
$Approval_{t-3}$	8.421		1,997.329***	
	(5.691)		(703.093)	
$Closure_{t+3}$		3.538		1,746.131**
		(2.241)		(677.746)
$Closure_{t+2}$		2.392		816.443
		(2.157)		(506.580)
$Closure_{t+1}$		-0.486		433.203
		(2.852)		(459.625)
$Closure_{t}$		-0.454		905.696
		(1.082)		(595.022)
$Closure_{t-1}$		3.379		1,849.976**
		(3.060)		(842.340)
$Closure_{t-2}$		1.066		759.416
		(1.758)		(1,566.112)
$Closure_{t-3}$		3.269		542.165
		(3.129)		(596.327)
Country/sector FE	Yes	Yes	Yes	Yes
Year/month FE	Yes	Yes	Yes	Yes
Country/year FE	Yes	Yes	Yes	Yes
Observations	22,125	22,125	22,125	22,125
R-squared	0.756	0.755	0.836	0.836

Notes: the table reports results form estimating equations (3a)-(3b). The increase in the total number of IDB mentions around an IDB operation approval and closure are shown in columns (1) and (2), respectively. The increase in the overall online mentions of a sector around an IDB operation approval and closure are shown in columns (3) and (4), respectively. Standard errors clustered at the country level. The data covers January 2015-May 2020.
Source: Authors' calculations based on IDB database of public digital conversation and IDB disbursements.

Table A4. Event Analysis: IDB and total online mentions in sectors around month of IDB publication

	(1)	(2)
	Online Mentions of IDB Publications	Online Mentions in a Sector
$Publication_{t+3}$	6.548	18,542.010
	(3.831)	(47,464.146)
$Publication_{t+2}$	-2.931	38,600.158
	(5.092)	(55,403.402)
$Publication_{t+1}$	-0.349	112,519.495
	(3.777)	(114,543.422)
$Publication_{t}$	10.655**	159,208.643
	(4.266)	(145,012.412)
$Publication_{t-1}$	2.986	144,256.626
	(5.586)	(130,663.594)
$Publication_{t-2}$	4.157	151,872.012
	(5.027)	(144,413.754)
$Publication_{t-3}$	5.904	76,644.899
	(4.301)	(76,780.077)
Sector FE	Yes	Yes
Year/month FE	Yes	Yes
Observations	976	976
R-squared	0.280	0.163

Notes: the table reports results from estimating equation (5). The changes in total mentions of IDB publications and overall online mentions of a sector around an IDB publication within sector-year-months are shown in columns (1) and (2), respectively. Standard errors are clustered at the sector level. The data covers January 2015-July 2020.