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SYNTHESIS REPORT

WHAT WORKS

IDA Regional Window Program 2003-17

Lessons from IEG Evaluations

1818 H Street NW
Washington DC 20433
Telephone: 202-473-1000
Internet: www.worldbank.org

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Synthesis Report
on
IDA Regional Window Program, 2003–17

April 9, 2019

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Evaluation Managers	
Director-General, Independent Evaluation	Ms. Alison Evans
Director, Financial, Private Sector, and Sustainable Development	Mr. José Carbajo Martínez
Manager, Sustainable Development	Ms. Midori Makino
Task Manager	Mr. Raghavan Narayanan
	Ms. Fang Xu

Executive Summary

The International Development Association (IDA) Regional Window Program was developed as a funding mechanism to provide additional financing resources to co-finance projects that help low-income countries achieve their regional integration objectives.

The program was initiated as a pilot in 2003 during IDA13 (2002—04) following with the Board paper "Pilot Program for Regional Projects" (IDA, 2003). The rationale behind this pilot was that with its "global reach and expertise on global and regional public goods, IDA is well-positioned to help poor countries, especially small economies, achieve regional integration objectives" (IDA14, 2009). From inception the IDA13 program had a strong focus on Africa; this focus has continued in subsequent IDA rounds (till IDA18 today) to promote regional integration as a way to better manage externalities, achieve economies of scale, and overcome challenges such as being landlocked.

Since its inception in 2003, the Regional Window has seen an increase in the number of projects and in commitment volume. The share of regional integration operations receiving Regional Window support has increased from 13 percent in 2003 to 38 percent in 2017. The total commitment increased from US$435 million during IDA13 to US$5 billion in IDA18.

IDA's perceived role and strengths were based on the World Bank's convening power and ability to link regional action to country strategies, deliver complex regional projects, scale up support for regional infrastructure, and leverage internal and external financing. The World Bank Group fosters regional integration by playing three overlapping roles: (a) supporting an enabling environment through advisory and analytical work; (b) financing projects through policy and investment loans; and (c) convening state and nonstate actors for coordination and collective actions. These three roles play out in projects executed using the IDA Regional Window. The key findings and conclusions on the program from the existing evaluations are:

Key Findings

- The IDA Regional Window is a critical source of financing for IDA countries pursuing integration objectives; it has contributed to the Bank Group's efforts to foster regional integration. Upstream, through Regional Window support, the Bank Group has strengthened the institutional capacity of regional institutions, promoted regional policy reform and harmonization, and helped set up new regional institutions. Through downstream financing, such as financing cross-border power and transport projects, the Regional Window fostered regional integration across (mainly) infrastructure sectors.

- The Bank Group was effective in fostering regional integration initiatives when it combined its revealed comparative advantages (financing instruments, knowledge) along with convening power to bring national and regional actors together in a single intervention.

Convening stakeholders for interregional and intraregional energy export initiatives (for example, CASA 1000), or organizing regional energy sector forums (for example, South Asia Champions Process), or strengthening transboundary water resource management (for example, Senegal-Guinea River Basin) illustrate this type of intervention.

- The IDA Regional Window supported good coverage to landlocked countries, small states, and states experiencing fragility, conflict, and violence (FCVs). All IDA-only landlocked countries and IDA-only small states were covered by the IDA Regional Window, accounting for 27.4 percent ($2.3 billion) and 7.3 percent ($600 million) of the total window commitment, respectively. About 39.3 percent of IDA Regional Window resources were invested in FCVs. Sectoral distribution has been more concentrated with the majority (about 87 percent) of the IDA Regional Window portfolio falling within the Sustainable Development and infrastructure sectors. This includes operations covering regional connectivity, regional public goods linked to Environment & Natural Resources, and regional water resources management.

- The Sub-Saharan Africa region attracted the largest share of IDA Regional Window support (65 percent) among the six regions. Outside of Sub-Saharan Africa, the demand for regional integration support has continued to increase during the evaluation period, evidenced in national plans and quantitative indicators such as trade openness levels and client interview responses. Though the concentration of the IDA Regional Window in the Sub-Saharan Africa region is justified, IEG frontier analysis found that non-Sub-Saharan Africa subregions with low regional integration or with untapped integration potential received limited IDA Regional Window support. Likewise, Northern Africa did not receive any IDA Regional Window support.

- The eligibility of projects for Regional Window financing is carried out on a rolling basis driven by the availability of good quality project proposals. Such a process has inadvertently created a fragmented portfolio with potentially missed opportunities for project expansion. The comparison between the Regional Window portfolio and the non-Regional Window portfolio found that there is no statistically significant difference between these two sets in terms of sectoral distribution, with most of the Regional Window portfolios in the sustainable development and infrastructure sectors. This raises the issue of whether the Regional Window could target priority sectors other than those currently covered by both portfolios. Regarding outcomes, the performance of these two sets of portfolios are at par with each other.

- In addition, IDA Regional Window guidelines require that projects tapping its resources should generate benefits that spill over country boundaries; yet, what constitutes spillover effects and how to measure such effects are not clearly defined or followed through during the project implementation. Subsequently, a robust framework to measure, monitor, and evaluate achievements on this front was not pursued by the IDA Regional Window–

supported project teams. As a result, very few Regional Window–supported portfolios were able to present evidence that they have generated spillover effects at project closure.

Conclusions

The deep-dive results discussed in this Synthesis further validated the evidence presented in the regional integration thematic evaluation. For a more detailed list of IEG recommendations specific to the IDA Regional Window Program, refer to *Two to Tango: An IEG Independent Evaluation of World Bank Group Support to Fostering Regional Integration*. The following conclusions are discussed in both the thematic evaluation and this Synthesis report.

- ***World Bank Group support to fostering regional integration, including IDA Regional Window-supported activities, in Africa has led to positive development results.*** The Bank Group's concerted efforts in the Sub-Saharan Africa region, supported by greater commitments from the IDA Regional Window resource envelope (75 percent allocation), prioritization at the sector level, tailored approaches at the subregional level, and directions from the Africa Regional Integration Strategy (2008, 2018) have led to positive collective actions from stakeholders, clients, and partners.

- ***The IDA Regional Window's resource allocation has not sufficiently expanded support for subregions with high untapped potential and with demand for integration***. Although the Regional Window offers opportunity to leverage co-financing and has been useful in addressing regional integration needs for IDA countries, countries afflicted with fragility, conflict, and violence, landlocked countries and small states, challenges remain in sufficiently expanding this portfolio to regions and subregions that have high potential. The Bank Group should revisit and recalibrate the allocation of IDA Regional Window resources, to expand "envelopes" for subregions with high potential and with demand for regional integration.

- ***Lack of robust indicators on spillover effects has inhibited the ability of IDA Regional Window–supported projects to generate evidence on meaningful regional integration results achieved at the subregion or regional level.*** One of the key conditions for leveraging IDA Regional Window resources is that the Bank Group project should generate spillover effects regionwide. Over the course of the five IDA cycles, there is limited evidence that such spillover effects were achieved, in part because there are no robust indicators in place to track and report such results. Given that capturing spillovers is a key criterion for IDA Regional Window co-financing, strengthening monitoring and evaluation (M&E) efforts to capture the economic benefits becomes paramount. This point is also reflected in the 2019 IEG evaluation *Two to Tango: An IEG Independent Evaluation of World Bank Group Support to Regional Integration*. More efforts will be needed to develop practical indicators and an appropriate M&E framework for the overall regional initiative over a time frame beyond individual projects.

The Composite Regional Integration (CRI) analysis should not be viewed as a unique or exhaustive assessment of potential regional integration outcomes. The CRI index is just one option to assess regional integration. The analysis presented in this report represents work in progress subject to further review.

Management Response

Management welcomes the Independent Evaluation Groups (IEG)'s three synthesis reports related to the International Development Association (IDA): (i) *Learning from IDA Experience: Lessons from IEG Evaluations, with a Focus on IDA Special Themes and Development Effectiveness*; (ii) *Synthesis Report on IDA Regional Window Program, 2003–17*; and (iii) *IDA's Crisis Response Window: Lessons from IEG Evaluations*. Together, the reports provide a useful summary of the existing evaluative evidence and provide valuable inputs to the IDA19 replenishment discussions.

Management welcomes IEG's conclusion in this synthesis report that "World Bank Group support to fostering regional integration, including IDA Regional Window–supported activities, in Africa have led to positive development results." Management also welcomes the finding that the concentration of the IDA Regional Window in the Sub-Saharan Africa region is justified and that it supported "good coverage to landlocked countries, small states, and states experiencing fragility, conflict, and violence." Outside Africa, the IDA Regional Window has also supported important regional initiatives, such as for connectivity in the Pacific Islands, transportation links in Central Asia, and the energy transmission between Central and South Asia. It is noteworthy that, despite the added complexity of regional integration projects, the overall IDA Regional Window portfolio success rate was found to be 73 percent, which is at par with the success rates of other projects.

The allocation of resources from the IDA Regional Window reflects IDA's deliberate strategic priorities and its aim to avoid fragmentation. Regional IDA resources are scarce, and client demand for regional integration projects exceeded available resources in both IDA17 and IDA18. The additional resources from the IDA Regional Window have helped to promote regional integration in Sub-Saharan Africa—a deliberate focus of the Window, given the region's lagging development and limited integration into subregional and global markets. Allocation of funds to other regions is based on their relative share of IDA's Performance-Based Allocation (PBA) system to their IDA countries. Selection of specific projects within the allocation to each region is based on strategic prioritization in each region and client demand underpinned by the often complex political dynamics in the different contexts. Efforts are underway in regions such as South Asia and Central Asia to renew their regional collaboration efforts.

Management agrees that regions and subregions that are least integrated and have high integration potential will require particular efforts, but the IEG-devised Composite Regional Integration (CRI) index should be interpreted with caution due to its methodological limitations. The CRI and frontier analysis provide a comparison of the levels of integration and untapped integration potential of 19 subregions as defined in the report. However, their application to allocations from the IDA Regional Window could be misleading (for example, Central Asia, Northern Africa, and Pacific and Oceania have relatively few or no IDA-eligible countries or very small IDA allocations). At the same time, this also reveals a challenge of engaging with a regional integration agenda in a subregion where countries have different income levels. Management will continue to review the performance of the IDA Regional Window and improve its design and processes for higher development impact, based on

experience and lessons learned (including from this report). The allocation and targeting of resources available through the IDA Regional Window will continue to be based on IDA's strategic priorities and criteria (as agreed among IDA shareholders) as well as on concrete client demand.

1. Introduction

Purpose, Scope, Methodology, and Structure of the Report

1.1 ***Purpose***: The main objective of this synthesis report is to inform policy decisions on the International Development Association (IDA) Regional Window Program in the context of the IDA18 mid-term review and the IDA19 replenishment. The report contains information on (a) the achievements of the program, and (b) key findings and conclusions for the consideration of IDA Deputies. This synthesis is derived primarily from IEG's thematic evaluation, *Two to Tango: An IEG Independent Evaluation of World Bank Group Support to Fostering Regional Integration* and is complemented by findings from other existing thematic evaluations such as *Grow with the flow: World Bank Group support to Trade Facilitation*, project-level evaluations and validations, and project performance assessment reports.

1.2 ***Scope***: The scope of the report covers the activities of the IDA Regional Window which opened in FY2003 and compares the activities of projects funded by the Regional Window to the activities of projects without such funding, within the regional integration portfolio. This report forms part of the evaluation exercise and focuses on the IDA Regional Window (to provide evidence on its effectiveness in fostering regional integration in IDA countries). Another important part of this report is the assessments of whether and how projects met the eligibility criteria for the Regional Window, especially in generating spillover effects, and the assessment of what have been the drivers of success.

1.3 ***Methodology:*** This report applied two key methodologies to arrive at key findings and conclusions: (a) Portfolio review of 64 closed and active Regional Window–supported projects to gather evidence related to the design, implementation, and progress made through the program and the extent to which the Bank Group's effectiveness is aligned with the ex ante criteria set by the program. Documents like Project Assessment Documents (PADs), Implementation Completion and Results Reports (ICRs), and Implementation Completion and Results Report Reviews (ICRRs) were reviewed to gather evidence on whether and how projects met the Regional Window eligibility criteria, and on whether project development objectives were achieved; and (b) Data Envelopment Analysis[1] to study the frontier regions and subregions with untapped potential for regional integration.

1.4 ***Structure***: The report is divided into three chapters: The first chapter discusses IDA Regional Window's evolution, engagement, and achievements. The second chapter discusses IDA resource allocation and implementation, and the third chapter provides conclusions synthesized from the IEG thematic evaluation *Two to Tango: An IEG Independent Evaluation of World Bank Group Support to Fostering Regional Integration*.

[1] Data envelopment analysis is a nonparametric method for estimating production possibility frontiers (details are provided in Section III). For a more elaborated introduction to DEA, see Coelli et al. (2005).

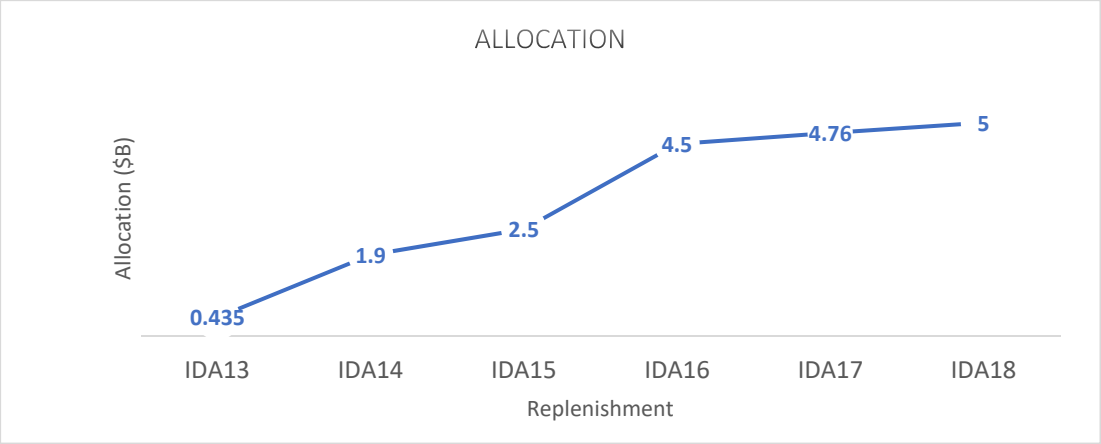
2. IDA Regional Window: Evolution, Engagement, and Achievements

2.1 **The IDA Regional Program was initiated as a pilot in 2003 during IDA13 (2002–04) with the Board paper "Pilot Program for Regional Projects" (IDA, 2003).** The reasoning behind this pilot was that with its "global reach and expertise on global and regional public goods, IDA is well positioned to help poor countries, especially small economies, achieve regional integration objectives" (IDA14, 2009). IDA's perceived role and strengths were based on the World Bank's convening power and ability to link regional action to country strategies, deliver complex regional projects, scale up support for regional infrastructure, and to leverage internal and external financing.

2.2 **The IDA Regional Window had a strong focus on Africa from its inception.** The IDA13 pilot financed a total of US$435 million in commitments for seven projects, of which five were in Sub-Saharan Africa and two in Europe and Central Asia. The focus on Sub-Saharan Africa was justified by the region's highly fragmented, resource-scarce, and landlocked economies, and the resulting vision of promoting regional integration to better manage externalities, achieve economies of scale, and overcome drawbacks of being landlocked.

2.3 **The IDA Regional Window was extended substantially during IDA14–IDA16 (2005–13) with increasing total commitments and strong focus on Sub-Saharan Africa (figure 2.1).** IDA15 (2008–10) scaled up the Regional Program even more—by about 32 percent compared to IDA14—in response to increased demand by IDA countries, committing roughly US$2.5 billion (5 percent of total IDA15 commitments). IDA16 (2011–13) continued the rising trend in Regional Program funding, with US$4.5 billion in total commitments and more projects in other regions. The rapidly rising demand for regional operations outside Sub-Saharan Africa, particularly in South Asia, expanded regional IDA financing in other regions. As a result, Sub-Saharan Africa's share of total commitments dropped from 92 percent in IDA15 to 76.5 percent in IDA16, while the share of South Asia increased to 14.5 percent. The IDA16 Regional Window financed 48 projects across five regions (31 in Sub-Saharan Africa, 9 in East Asia and the Pacific, 3 in Latin America and the Caribbean, 3 in South Asia, and 2 in Europe and Central Asia). As with IDA15, infrastructure represented the largest share of regional projects (92 percent), but demand from the health sector experienced a notable increase, particularly related to regional disease surveillance.

Figure 2.1 IDA Regional Window Resources by IDA Round



Source: IEG Portfolio Review and Analysis.

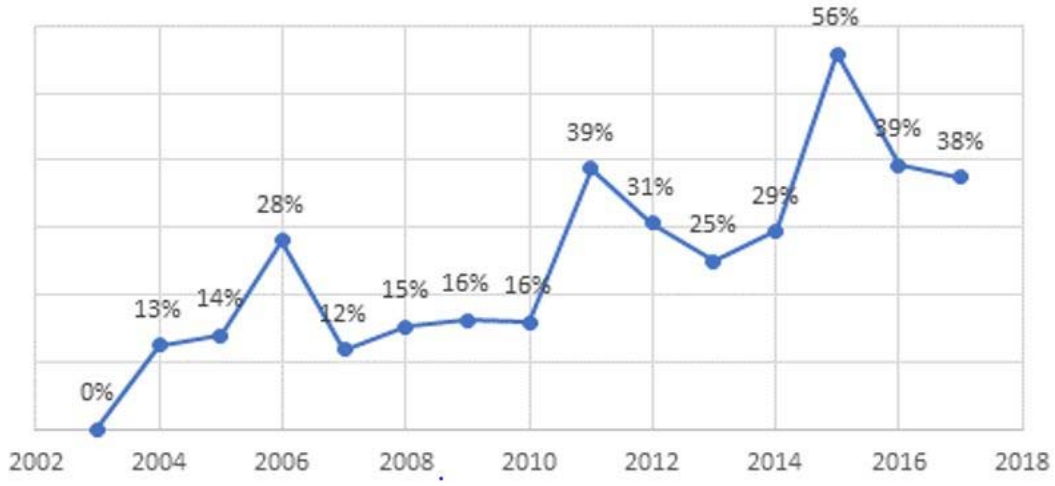
2.4 The IDA Regional Window also enhanced its support to regional institutions, fragile and conflict-affected situations (FCS), and small states. In 2009, IDA15 launched the IDA Regional Grant for institutional strengthening. It was launched after the IDA15 mid-term review to provide regional institutions with grants of up to 10 percent of the regional IDA envelope to support them in the implementation of IDA regional projects. After the IDA16 mid-term review, IDA adjusted the criterion to allow regional institutions access to the regional grant program even if they are not directly associated with an ongoing regional IDA-funded project. The adjustment was endorsed based on the role of these institutions in helping advance regional integration. IDA16 increased its support to FCS, which received almost a third of total IDA16 Regional Program commitments (for example, in Sub-Saharan Africa more than half of the regional funds were targeted to FCS). Also, it added flexibility in the Regional Program's eligibility criteria, allowing funding for two countries (instead of three) when one of them is a FCS. To enhance support to small states, IDA15 introduced a cumulative 20 percent cap on national IDA contributions to regional projects. This provision was applicable to all IDA countries, but was expected to disproportionately benefit small states with populations below 1.5 million. IDA18 updated the eligibility criteria for small countries as follows: "rather than being linked to the size of a country's annual allocation, eligibility for the 20 percent cap is extended to all small states—that is, countries with populations of 1.5 million or less" (IDA18, 2017).

2.5 Regarding eligibility for the Regional Program, IDA17 introduced the possibility of single-country financing from the IDA Regional Program for projects with a transformational regional impact, on a case-by-case basis and subject to a two-step process and approval by the IDA Executive Directors. For IDA18 (2018–20) the IDA Regional Program was topped up significantly to Special Drawing Rights (SDR)5 billion, given the increasing demand for the program. This envelope includes SDR1.4 billion for a newly established refugee sub-window for IDA countries that host refugees, with the aim to promote more effective, equitable, and sustainable solutions to the refugee crisis.

IDA Regional Window Engagement

2.6 The IDA Regional Window serves as an important financing vehicle for the Bank Group's fostering of client's regional integration priorities. Its share of regional operations experienced an upward trajectory through the evaluation period. The growth of the IDA Regional Window resources is a useful proxy for strong demand from IDA clients. As discussed in the previous section on evolution of the IDA Regional Window, The Bank Group established the IDA Regional Program at IDA13 and has expanded it since then. The IDA regional window provided additional financial resources to promote regional integration through regional operations. During the evaluation period, 140 projects in 67 countries, equivalent to 75 percent of all IDA and IDA and International Bank for Reconstruction and Development (IBRD) regional integration investment projects received IDA Regional Window support. Over time, Regional Window support to regional integration operations has been increasing. Since the Regional Window's inception in 2013, the share of regional integration operations receiving its support has increased from 13 percent in 2003 to 38 percent in 2017 by project numbers (figure 2.2). A comparison of IDA Regional Window– and IDA non-Regional Window–supported projects also shows an increasing trend for Regional Window projects (figure 2.3).

Figure 2.2 Share of Regional Integration Operations Receiving IDA Regional Window Support



Source: IEG Portfolio Review and Analysis.

2.7 The IDA Regional Window has supported good coverage of landlocked countries, countries affected by fragility, conflict, and violence (FCVs), and small states. All IDA-only landlocked countries and small states were covered from the Regional Window and accounted for 27.4 percent and 7.3 percent, respectively, of the total window commitment, while 39.3 percent of the commitment was invested in FCVs (table 2.1). The focus of support for landlocked countries has been on improving their connectivity with coastal neighbors. In small states, the Bank Group's support has focused on connectivity improvement and environmental resilience and sustainability. The Bank Group supported the social and economic stability of FCV countries by

enhancing access to services and markets through improved regional infrastructure and connectivity, and by promoting regional trade through institutional capacity development.

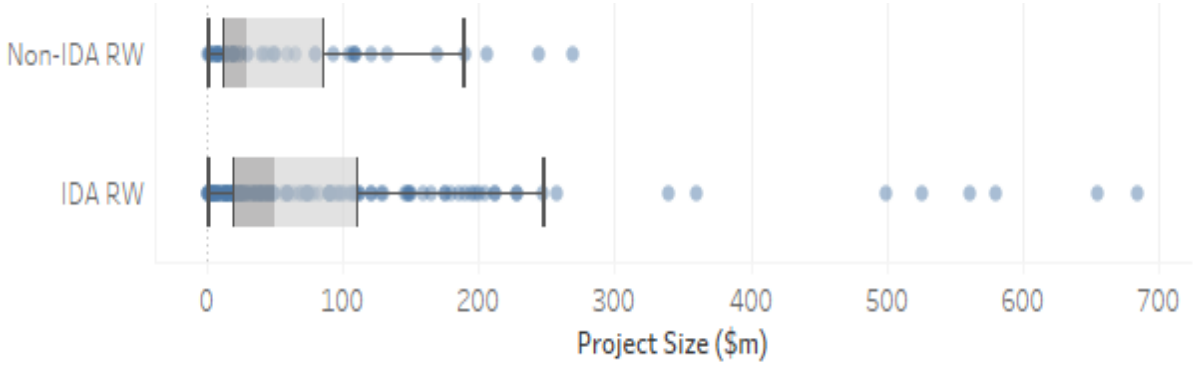
Table 2.1. IDA Regional Window Commitment to Landlocked/FCVs/Small States

	Countries Covered (# and %)	*Commitment Amount ($m)*	*Share of IDA Regional Window (percent)*
Small States	17 IDA Countries 100%	$0.61b	7.3
Landlocked	21 IDA Countries 100%	$2.3b	27.4
FCVs	37	$3.3b	39.3

*There are overlaps between commitment on small states, landlocked countries, and FCVs.
Source: IEG Portfolio Review and Analysis.

2.8 The IDA Regional Window tends to support larger and riskier regional operations. It funded larger regional integration projects. On average, the size of a Regional Window–funded project is US$96 million while the average size of a project not funded by the Regional Window is only US$59 million. Especially in the energy sector, the projects supported by the Regional Window on average are worth $251 million, which is seven times larger than those projects that are not supported by the window. Most large projects in IDA countries are covered by the IDA Regional Window; for example, the power market projects in Sub-Saharan Africa and CASA-1000 in South Asia and Europe and Central Asia.

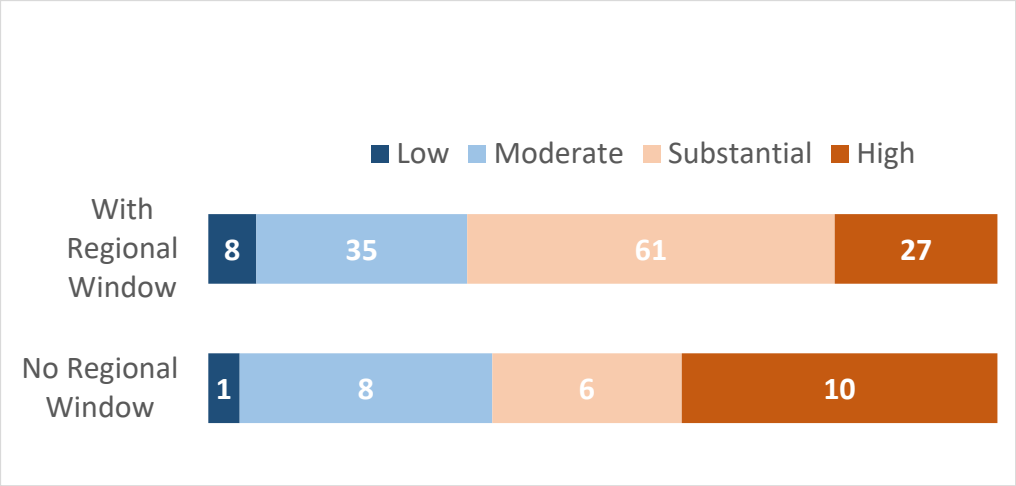
Figure 2.3. Project Size Distribution (IDA and IBRD/IDA Investment Projects)



Source: IEG Portfolio Review and Analysis.

2.9 In addition, Regional Window–funded projects have a slightly larger share (67 percent) with Substantial or Higher risk compared to those not funded by the Regional Window (64 percent) (figure 2.4).

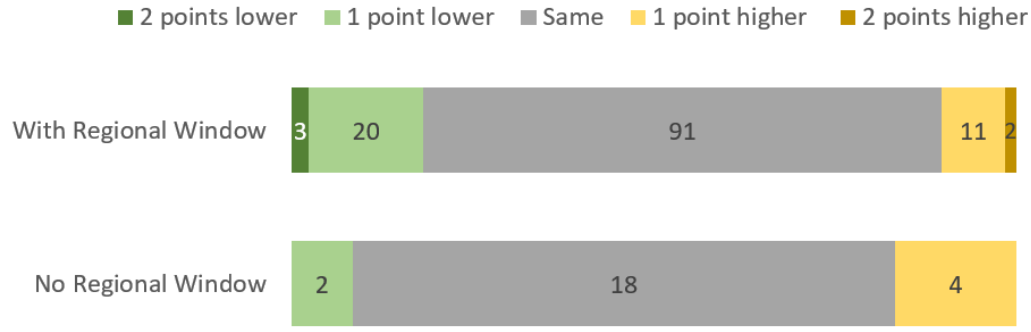
Figure 2.4. Latest SORT Risk Ratings of World Bank Regional Integration Lending Projects



Source: IEG Portfolio Review and Analysis.
Note: Bars represent the number of projects.

2.10 Operational risks (as informed by SORT ratings) of IDA Regional Window–supported projects exhibited a slight reduction in risk ratings during the implementation period[1] (see figure 2.5) and a greater percentage of projects exhibited one or two-points reduction compared with the rest of the IDA Regional Window portfolio and compared with the regional projects not supported by the IDA Regional Window. A review of closed IDA Regional Window–supported projects revealed that the main reasons for such trends were macro-economic, and institutional capacity strengthening efforts.[2] A more detailed review of operational risks in all IDA Regional Window projects to extract lessons could be pursued by operational teams in the future as the projects mature and close.

Figure 2.5. Risk Ratings of Projects with and without Regional Window Support



Source: IEG Portfolio Review and Analysis.
Note: The bars represent the number of projects.

Achievements of IDA Regional Window

2.11 The IDA Regional Window has leveraged the Bank Group's comparative advantage in fostering regional integration initiatives. Regional integration projects supported by the IDA

Regional Window leveraged the Bank Group's global knowledge and its comprehensive set of financing instruments, draw synergies from the three Bank Group institutions (IBRD/IDA, the International Finance Corporation [IFC], and the Multilateral Guarantee Agency [MIGA]), and catalyze regional actors and sources of finance. Convening stakeholders for interregional and intraregional energy export initiatives, nurturing global knowledge flows to the regions, and generating and strengthening transboundary water resource management (for example, the Senegal-Guinea River Basin) are key types of intervention.

2.12 The IDA Regional Window contributed to the Bank Group's efforts to foster regional integration. Through the support of the Regional Window, the Bank Group has strengthened the institutional capacity of regional institutions, promoted regional policy reform and harmonization, and helped set up new regional institutions. Regional institutions, especially those in Africa, benefited from the IDA Regional Window, which provides up to 10 percent of the regional IDA envelope as grants for preparing or implementing regional operations and building the entities' capacity. The review of the IDA Regional Window portfolio found that about 80 percent of the projects supported regional institutions. There is engagement with strategic partners like the African Union Commission (AUC). At the thematic level, the Bank Group is assisting partners such as the Dar es Salaam Corridor Committee in the transport sector, the West Africa Power Pool Secretariat in the energy sector, and the Nile Basin Authority and India Ocean Commission in the water sector. At the national level, the Bank Group is facilitating the harmonization of standards and sharing best practices to reduce administrative constraints and barriers between neighboring countries. For example, in the West Africa Agriculture Production Program, the Bank supported the establishment of regional regulations on genetic materials and agrochemicals, including support for developing harmonized regulations on fertilizers (under preparation by the Economic Community of West African States [ECOWAS]) and for project countries to align their national regulations with the ECOWAS regulations.

2.13 Regional Window support enhanced the capacity of institutions engaging in regional integration. The Organisation for Economic Co-Operation and Development (OECS) E-government For Regional Integration Project promoted quality of public services through the delivery of regionally integrated e -government applications that take advantage of economies of scale. In the water sector, the Senegal River Basin Multi-Purpose Water Resources Development Project promoted regional integration among the riparian countries of the Senegal River Basin through Organisation pour la mise en valeur du fleuve Sénégal (OMVS) for multipurpose water resources development to foster growth and improve livelihoods in the community. Eighty percent of Water User Associations (WUAs) enhanced their technical capacity, access to information, and decision-making processes; eight new WUAs were created, and 40 existing WUAs were supported and re-mobilized with training and equipment. In the fisheries sector, 3A-West Africa Fisheries Project strengthened the capacity of Cape Verde, Liberia, Senegal, and Sierra Leone to govern and manage targeted fisheries, reduce illegal fishing, and increase local value added to fish products. The project ensured the establishment of clear principles and

policies to increase the wealth from fisheries through strengthened rights and equitable allocation of these rights, which balances economic efficiency and social benefits. In the energy sector, the Bank Group supported the creation of the West African Gas Pipeline Authority, a new regional gas regulatory authority, through the West Africa Gas Pipeline project (P082502).

2.14 The IDA Regional Window supported regional projects in Africa, enhancing collaboration and knowledge and technology sharing among countries. In the agricultural sector, The West Africa Agricultural Productivity Program promoted the generation and dissemination of improved technologies in those of the participating countries' top priority areas that are aligned with the region's top priorities. The project exceeded its target and made available improved technologies that increased production in the sector. Also, the Eastern Africa Agricultural Productivity project enhanced regional specialization in agricultural research; enhanced collaboration in agriculture training and dissemination; and facilitated increased sharing of agricultural information, knowledge, and technology across country recipients' boundaries. The rate of change in regional specialization and collaboration in agricultural research, measured by combining five sub-indicators, was estimated at 73.75 percent compared with a target of 72.5 percent at project closing.

2.15 Through downstream financing, such as financing cross-border power and transport projects, the IDA Regional Window fostered regional integration across (mainly) infrastructure sectors. Seventy percent of its closed and evaluated projects were infrastructure projects: these included reforms and compliance with international standards in the aviation industry, improvement and expansion in electricity, energy markets, and financial sector development as well as in transport and transit, and promoting better service delivery.

(i) In transport and transit, the World Bank supported interventions for improvement and expansions of transport infrastructure and transit. The 3A-West Africa Transportation and Transit Facilitation Project led to the rehabilitation of 311 km of roads in key sections of the Corridor as targeted (including 54 km in Burkina Faso, 103 km in Mali and 154 in Ghana). At project closure, about three-quarters of the roads in the Tema-Ouagadougou section of the Corridor were reported to be in good condition as targeted, and 85 percent of the roads in the Bamako section of the Corridor were in good condition. This exceeded the target of 60 percent.

(ii) In aviation, World Bank interventions like the 3A-West and Central Africa Air Tran TAL project aimed to improve compliance of its civil aviation sector and its international airports with International Civil Aviation Organization (ICAO) safety and security standards. At project closing, most participating countries had met the project target of compliance with ICAO standards. For Burkina Faso, the compliance rate increased from 49 percent at the baseline in 2006 to 70 percent as targeted. For Cameroon, it increased from 48 percent to 68 percent, slightly below the target of 70 percent. For Mali, it increased from 28 percent to 75 percent, slightly above the target of 74 percent. For Guinea, it increased from 53 percent to 70 percent, slightly below the target of 75 percent.

(iii) In the electricity sector, project development objectives were exceeded at closing. The ECSEE APL #2 (SERBIA) project aimed to improve electricity market access for consumers and suppliers through increase in the quantity, quality, reliability, safety, and efficiency of the bulk power transmission system, and to strengthen capacity of the institutions to participate in the regional electricity market. The project's outcome target was that one year after the substations were fully commissioned, losses would be reduced by at least 15 percent; voltages would be within their operating limits; and energy interruptions would be reduced by at least 40 percent. Early results of four completed substations indicate that the targets for the quality of their output are being surpassed. On average, energy losses have been reduced by 64 percent, energy interruptions by 87 percent, and voltage drops by 62 percent. The West Africa Power Pool project ensured the supply of low-cost hydroelectricity from the OMVS Power System to the national utilities of Mali (EDM), Mauritania (SOMELEC) and Senegal (SENELEC). The project achieved most of its project development objective (PDO) indicator targets. The project also contributed to building capacity for the management of the overall OMVS power system.

(iv) In financial sector, the West African Economic and Monetary Union (WAEMU) Capital Market Development Project supported financial infrastructure development in the WAEMU region. The intermediate outcome indicator on Banque Ouest Africaine de Développement (BOAD) publicly issues at least CFAF10 billion in bonds per year in the regional capital market in 2004 and thereafter achieved 430 percent of its target. Bonds of CFAF 43 billion were issued at project completion, compared to CFAF 10 billion per year at project approval.

[1] Results not statistically significant

[2] For projects with two or more SORT ratings, the latest was compared to the first. Among Regional Window–supported projects, 18 percent experienced the risk reduction over time compared with 8 percent for non-Regional Window projects

3. IDA Regional Window Resource Distribution and Implementation

Resource Distribution

3.1 The IDA Regional Window's Africa focus is well-justified and attributable to the intention at inception for the Regional Window to finance projects in Africa, particularly infrastructure projects in Sub-Saharan Africa, to increase the region's global competitiveness. It is also because of increasing need and demand for regional projects in Sub-Saharan Africa, which is strengthened by African leaders' recognition of regional integration as a strategic development priority. Because of the considerable need and demand for regional solutions in Africa, 80 percent of the funding for the IDA Regional Window is made available for projects in Africa, so long as there are well-designed and eligible projects in that region. The remaining 20 percent are allocated to other regions and countries based on three factors: the regular Performance-Based Allocation (PBA) shares of IDA resources for each region, the level of demand, and the quality of project proposals.

3.2 At the same time, strong demand exists for regional integration across all regions,[1] particularly initiated by landlocked or small states, and low-income countries. Specifically,

- In Central Asia, various initiatives were created to promote regional integration. In addition to the Central Asia Regional Economic Cooperation Program (CAREC) and the United Nations Special Program for the Economies of Central Asia (SPECA) which focus on cooperation on regional infrastructure, the Eurasian Economic Community (EurAsEC) was formed in 2000 to prepare the groundwork for the implementation of a customs union and, subsequently, a single market. The recent political transition in Uzbekistan has opened a new space for regional integration initiatives. The March 2018 meeting in Astana, Kazakhstan, brought together the leaders of Kazakhstan, Uzbekistan, Tajikistan, and the Kyrgyz Republic, and Turkmenistan's Parliament Chairman. This development has likely opened a new era for Central Asian regional integration. IEG's regional case study findings in Central Asia further validated the strong demand from client countries, especially from three of the five Central Asian countries (two of which are IDA-only, and one is a Blend), namely the Kyrgyz Republlic, Tajikistan, and Uzbekistan.

- In South Asia, though overall the climate for regional integration is weak, given the region's geopolitics, the South Asian Association for Regional Cooperation (SAARC) was established in Dhaka, Bangladesh, on December 8, 1985[2] to promote the development of economic and regional integration by seven countries; but it made limited progress. Nevertheless, the demand for regional integration at the subregional level remains strong: in the west, there is the effort to promote cooperation between Afghanistan and Pakistan; in the east, it is between Bangladesh, Bhutan, India, and Nepal (BBIN). There is also

interregional integration; for example, between countries of the South Asia and Central Asia Regions. IEG's regional case study focused on South Asia validated the level of strong client demand that exists in Nepal and Bangladesh, particularly in the energy, tourism and water resources management sector.

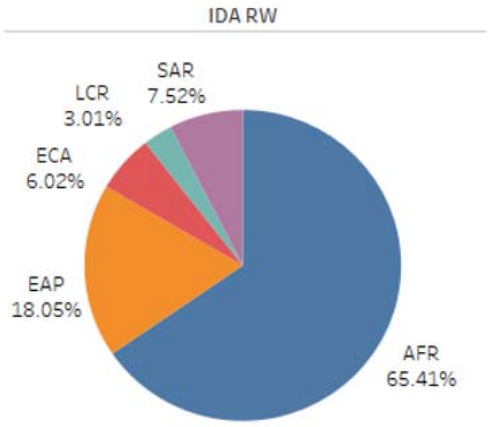
- In the East Asia, Southeast Asia, and the Pacific Region, The Association of South East Asian Nations (ASEAN) is playing a lead role in promoting Asia-wide integration, because it is around ASEAN that major groups such as ASEAN+3 and the East Asia Summit revolve.

- In Latin America and the Caribbean, regional integration has moved to the forefront of the policy debate as a viable intermediate solution to the slow growth rate experienced after the boom period of the 2000s. The goal of leveraging formal trade arrangements to accelerate growth is evident in many of the trade agreements that are in place in the region. For example, an objective of the Pacific Alliance—the 2012 integration agreement between Chile, Colombia, Mexico, and Peru—is "driving further growth, development, and competitiveness of the economies of its members." Similarly, the Dominican Republic–Central America Free Trade Agreement (CAFTA-DR) lists the creation of "new opportunities for economic and social development" and "new employment opportunities and improved working conditions and living standards in their respective territories" as some of its resolutions.

- In the Middle East and North Africa, significant progress has been made in reducing barriers to trade in goods within the region and, to some extent, between the region and the rest of the world. During the past decade, reductions in most-favored-nation tariffs complemented preferential liberalization under the Pan Arab Free Trade Area (PAFTA) and other preferential trade agreements (PTAs). Indeed, the Middle East and North Africa was the region in which tariffs, especially those on manufactured goods, decreased the most during the global financial crisis.

3.3 With less than 30 percent of the Regional Window resources allocated to regions other than Sub-Saharan Africa, regions and subregions within and outside of Africa that have low regional integration or with untapped potential for it, received limited support from the Regional Window, even as demand increased. The unmet demand for support for regional integration was also evidenced by the fact that, from the total population of World Bank regional projects that pursue regional projects, a significant percentage of projects don't make it to the qualified pipeline of projects and less than two-thirds received support from the Regional Window.

Figure 3.1. IDA Regional Window Resources Distribution by Region



Source: IEG Portfolio Review and Analysis.
Note: AFR = Sub-Saharan Africa; EAP = East Asia and Pacific; ECA = Europe and Central Asia; LCR = Latin America and the Caribbean; SAR = South Asia.

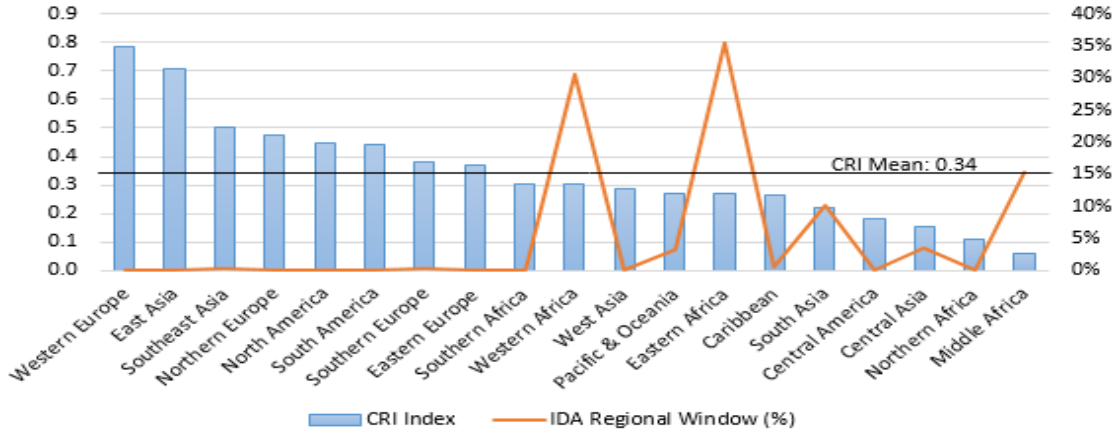
3.4 A Composite Regional Integration Index–based gap analysis, developed for the purposes of the evaluation, suggests that challenges exist with the current resource allocation process and implementation. To assess the needs for regional integration, for example, as measured by the regional integration level, IEG constructed a Composite Regional Integration (CRI) Index to measure the status of regions and 19 subregions[3] classified by the United Nations (2017).[4] This index is composed of 11 individual sub-indicators measuring different aspects of regional integration along 5 dimensions: (a) trade integration, (b) financial integration, (c) regional investment and production networks, (d) movement of people, and (e) peace and security[5] (see appendix C for CRI specifics). In addition, one other key indicator of the CRI is Trade Openness, measured at the country level. This indicator can be treated as another proxy for client demand for integration.

3.5 At the lower end of the IEG CRI Index composite ranking are Central America (0.14), Central Asia (0.16), Northern Africa (0.11), and Middle Africa (0.06). At the same time, the IDA Regional Window had low engagement with these subregions, except Middle Africa (Central Africa); Central Asia and Central America received only 1.8 percent and 0.33 percent of total Regional Window resources between FY03 and FY17, and Northern Africa did not receive any IDA Regional Window support. During the same period, nearly 80 percent of the IDA Regional Window's resources went to the Africa region; for example, Western African and Eastern Africa had higher CRI indexes than several non-Sub-Saharan Africa subregions, but received much larger shares of IDA Regional Window resources, about 30 percent and 34 percent respectively.

3.6 In addition, a regional integration frontier analysis also suggested that the IDA Regional Window does not necessarily provide good coverage for those subregions with high potential for regional integration. The regional integration frontier analysis uses the CRI Index in combination

with additional dimensions and indicators; for example, the enabling environment for regional integration and factors that are more directly in control of governments and international policy makers including trade openness, cross-border infrastructure, and business regulation environment, to assess the degree of untapped regional integration potential in each of the 19 subregions. This is accomplished by first estimating regional integration potential for given levels of enabling factors, and then calculating the extent to which this potential is currently being reached by individual subregions (figure 3.2). The analysis found that all geographical regions include subregions with considerable untapped potential for integration. Globally, average regional integration levels across all subregions were found to be at 60 percent of the estimated potential, with Central America and Northern Africa having the most untapped potential.

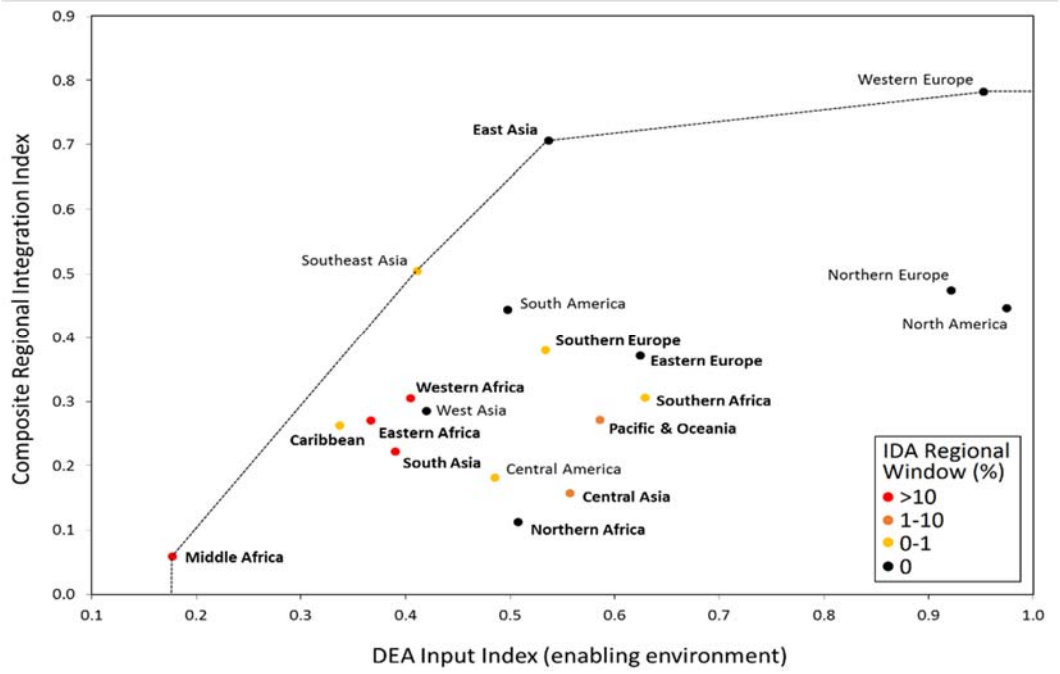
Figure 3.2. Composite Regional Integration Index and IDA Regional Window Commitments[6]



Source: IEG.

3.7 Subregions with the most untapped integration potential received low-level support from the IDA Regional Window (figure 3.3; see also appendix B and appendix C for more details on the assumptions and potential limitations). The Northern Africa, Central Asia, and Pacific & Oceania subregions are further away from the regional integration frontier, and collectively received only about 5 percent of IDA Regional Window resources during the evaluation period. Eastern Africa, Western Africa close to their regional integration frontier, and Middle Africa on the borderline, were the main recipients of IDA Regional Window resources.

Figure 3.3. IEG's Regional Integration Frontier Analysis



Source: IEG. Note: X-axis represents the enabling environment for regional integration; Y-axis represents the composite regional integration index values. Regions that are on the upper half of the chart are better regionally integrated.

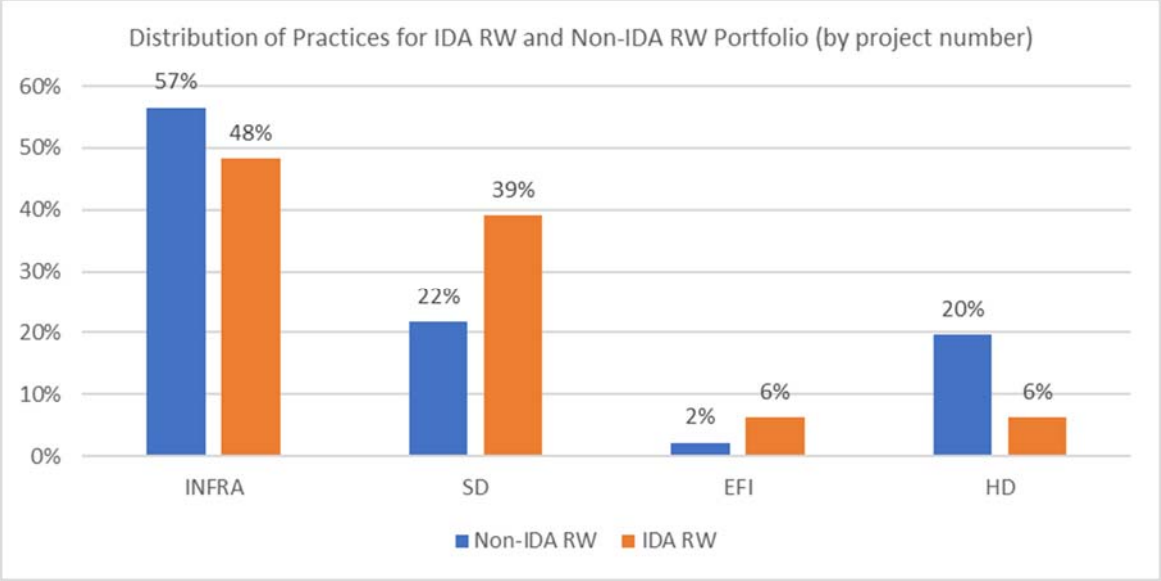
IDA Regional Window Implementation

3.8 The IDA Regional Window implementation and its contributions to fostering regional integration are characterized by a fragmented approach to resource allocation and by a lack of strategic prioritization. More specifically, once the resources are allocated to regional vice-presidential units (VPUs), the regional VPUs and the IDA Resource Mobilization Department worked together to assess the projects' eligibility for Regional Window resources on a rolling basis. The criteria used are the ones set out in the IDA guidelines,[7] and in some cases, additional considerations such as sectoral and subregional balance, set by the regional VPUs. Because the assessment of eligibility is on a rolling basis, typically the projects submitted first were assessed and approved for the IDA Regional Window. Such a process has inadvertently created a Regional Window portfolio that is not fully aligned with regional integration potential at the subregional level. For example, in East Africa, while the national development plans emphasized the Agricultural sector as a priority sector, the efforts of the Bank Group and its partners were focused in infrastructure and connectivity solutions during the evaluation period.[8]

3.9 The comparison between the regional integration portfolio using the IDA Regional Window (Regional Window portfolio) and the regional integration portfolio not using the IDA Regional Window (non-Regional Window portfolio) found that there is no significant difference between these two sets in terms of sectoral distribution or project performance. Both portfolios have been concentrating on the infrastructure and Sustainable Development sectors. However,

the comparison does find that the IDA Regional Window provided more support to the management of regional public goods like environment and regional water resources (Sustainable Development sector), revealing the potential of the Bank Group's regional support in this area. On the other hand, the Regional Window's support to the Human Development sector was lower than from the non-Regional Window portfolio (figure 3.4).

Figure 3.4. Distribution of IDA Regional Window–Supported and non-Regional Window–Supported Projects, by Global Practice



Source: IEG Portfolio Analysis.
Note: INFRA = infrastructure; SD = Sustainable Development; EFI = Equitable Finance and Innovation; HD = Human Development; RW = Regional Window.

3.10 IDA Regional Window eligibility criteria and indicators for spillover effects are neither clear nor well measured. Consequently, there was limited evidence that the Regional Window portfolio has generated spillover effects within a region or performed better than those initiatives without its support. The Regional Window guidelines require that projects tapping its resources should generate benefits that spill over country boundaries; yet, what constitute spillover effects and how to measure such effects are not clearly defined or followed through during the project implementation. IDA guidelines characterized spillover effects as those "generating positive externalities or mitigate negative ones across countries" or "additional impact on growth and poverty reduction in the region."[9] Knowing that it is difficult for projects to present evidence on their impacts on growth and poverty reduction right at their closure, IEG expanded the scope of spillover effects to include knowledge and industry spillovers (table 3.1). Even with the expansion, IEG analysis of the Regional Window portfolio over the five most recent cycles (IDA13–18), found that the majority of Regional Window–financed projects did not present evidence on spillover effects at their closure.

Table 3.1. Types of Spillover Effects from Regional Integration Interventions

Kinds of spillovers	*Knowledge spillovers*	*Industry spillovers*	*Growth spillovers*
Characteristics			
Definition	Creation of values for a firm or an organisation thanks to knowledge created by other firms or organisations	Creation of values for a firm or an organisation thanks to the performance of another firm in the same or different sectors	Creation of growth potentialities of a region thanks to the growth for other regions
Economic nature	Knowledge as a public good Technological externalities	Productivity enhancing elements as technological and pecuniary externalities	Growth enhancing opportunities as public goods Technological externalities
Level of analysis	Firm level Regional level	Firm level Industry level	Regional level
Expected effects	Only positive	Positive and negative	Positive and negative

Source: IEG Literature Review.

3.11 Specifically, the review of a total of 64 (40 active, 24 closed) IDA Regional Window–financed projects found that most (60 out of 64) of these projects claimed to have spillover effects, with about 44 percent of the effects being knowledge spillovers (28 out of 64), followed by 33 percent industry spillovers (21 out of 63) and 17 percent claiming to have growth spillovers (11 out of 63) at appraisal stage. However, IEG found few specific indicators to monitor such effects. Only about 30 percent (8 out of 24) of closed projects provided evidence on spillover effects, again mostly on knowledge spillovers 17 percent (4 out of 24) with a few on industry spillovers 13 percent (3 out of 24), but almost zero (4 percent) on growth/poverty spillovers (1 out of 24). By comparison, a high share of the same set of projects claimed to have spillover effects when they were appraised, dominated by industry spillovers at 42 percent (10 out of 24) followed by knowledge spillovers at 25 percent (6 out of 24) and growth at 25 percent (6 out of 24) spillovers (table 3.2.; see Appendix B for detailed analysis).

Table 3.2. Spillover Effects of IDA Regional Window Projects

Type of Spillover	Spillover claimed at appraisal all projects (64)		Spillover claimed at appraisal for closed projects (24)		Spillover claimed at closing for closed projects (8 out of 24)	
	No. of Projects	%	No. of Projects	%	No. of Projects	%
Knowledge	28	44	6	25	4	17
Industry	21	33	10	42	3	13
Growth	11	17	6	25	1	4

Source: IEG Portfolio Review and Analysis.

3.12 In terms of overall performance, the IDA Regional Window portfolio achieved 73 percent success rate (as measured by outcomes rated moderately satisfactory or above). This success rate was slightly below the Bank Scorecard targets and not statistically significant from the success rates of non-IDA Regional Window–supported projects.

[1] As defined by the Bank Group regional classification.

[2] In 1978, the Committee for Studies on Cooperation in Development (CSCD), had previously conceptualized the idea of a South Asian Community.

[3] As per UN Geoscheme

[4] The only exception is Azerbaijan, which we include in Central Asia to be more in line with World Bank classifications.

[5] These categories are broadly in line with other studies on regional economic integration, e.g., African Union Commission, African Development Bank, and UNECA (2016), Huh and Park (2018), and Naeher (2015).

[6] Bank Group support to European Union member countries: Not being mindful of changes outside Europe risks the loss of European competitiveness and influence, and the World Bank's global mandate makes it a useful partner for European organizations. First, during discussions with the European Commission and Poland's Presidency of the European Council in 2011, the World Bank was repeatedly asked to provide a global perspective on European policy debates. Second, the World Bank has helped through analytical work to inform members of the European Community on how they can best respond to economic developments in other parts of the world—especially in North America and East Asia—so that regional integration in Europe continues to deliver prosperity and peace in the neighborhood and around the world. The most widely cited examples of such engagements are Europe and Central Asia regional reports, especially Golden Growth, a detailed assessment of the strengths and weaknesses of regional integration in Europe published in 2012. The report and related work have helped to bolster confidence in European integration and provide guidance on how to make it stronger. In March 2018, the Europe and Central Asia Region published *Growing United: Upgrading Europe's Convergence Machine*, which began with this message from the World Bank's chief executive officer: "In 2012, even as the European Union was still struggling with the after-effects of the crisis, the World Bank's Golden Growth report reminded readers that "Europe has achieved economic growth and convergence that is unprecedented ... by fostering a regional economic integration unique in both depth and scope, Europe has become a 'convergence machine.' By engineering entrepreneurial dynamism while balancing market forces with social responsibility, it has made 'brand Europe' globally recognized and valued. And by striking a balance

between life and work, it has made Europe the world's 'lifestyle superpower.'" During the crisis, as a member of the European Commission I would often use this quotation — and quote more widely from the Golden Growth report itself as I sought to remind colleagues that Europe's strength rests in its unity "(page 10). Perhaps the main contribution of Bank Group engagement is to keep the discussions in Europe from becoming insulated from developments in other parts of the world.

The risks to open regionalism are greater in a region where integration extends beyond trade and investment to include social policy and political institutions. An example: Chancellor Angela Merkel has used the analysis in Golden Growth frequently in her speeches, repeatedly warning that "Europe has 7 percent of the world's population, 25 percent of its economic output, and 50 percent of its social welfare spending, and we have to change this." Today, for example, the World Bank has active technical assistance programs in Greece and Cyprus, where it works jointly with the European Commission and other European institutions to upgrade institutions and policies related to social protection and the business environment. IFC has invested in Greece's airports and financial sector. In the aftermath of the euro crisis, the World Bank also participated in technical assistance efforts in Italy, Portugal, and Spain."

[7] IDA guidelines set out four eligibility criteria for Regional Window projects: i.) that involve three or more countries, all of which need to participate for the project's objectives to be achievable (at least one of which is an IDA country). The required minimum number of countries is reduced from three to two if at least one fragile country participates in the regional project; ii.) whose benefits spill over country boundaries (for example, generate positive externalities or mitigate negative ones across countries); iii.) where there is clear evidence of country or regional ownership (for example, by ECOWAS or SADC) which demonstrates commitment of most participating countries; and iv.)that provides a platform for a high level of policy harmonization between countries and is part of a well-developed and broadly-supported regional strategy.

[8] IEG's review of regional integration strategies of East African countries, the East African Community, and development partners including the World Bank Group.

[9] IDA18 guidelines.

4. Conclusions

4.1 Overall the IDA Regional Window has evolved well and has overcome historical constraints in deploying additional funding to IDA countries pursuing regional integration initiatives. The eligibility criteria have been adhered to mostly at the concept and project appraisal stages.

4.2 The Bank Group's concerted efforts in Sub-Saharan Africa region are substantial and have led to positive results across several subregions and sectors. The following conclusions are discussed in both the thematic evaluation (*Two to Tango: An IEG Independent Evaluation of World Bank Group Support to Fostering Regional Integration)* and this Synthesis report:

- ***World Bank Group support to fostering regional integration, including IDA Regional Window–supported activities, in Africa have led to positive development results.*** Bank Group's concerted efforts in the Sub-Saharan Africa region, supported by greater commitments from the IDA Regional Window resource envelope (75 percent allocation), prioritization at the sector level, tailored approaches at the subregional level, and directions from the Africa Regional Integration Strategy (2008, 2018) have led to positive collective actions from stakeholders, clients and partners.

- ***IDA Regional Window's resource allocation has not sufficiently expanded support for subregions with high untapped potential and with demand for integration***. Although the Regional Window offers opportunity to leverage co-financing and has been useful in addressing regional integration needs for IDA countries, countries afflicted with fragility, conflict, and violence, landlocked countries and small states, challenges remain in sufficiently expanding this portfolio to regions and subregions that have high potential. The Bank Group should revisit and recalibrate the allocation of IDA Regional Window resources, to expand "envelopes" for subregions with high potential and with demand for regional integration.

- ***Lack of robust indicators on spillover effects has inhibited the ability of IDA Regional Window–supported projects to generate evidence on meaningful regional integration results achieved at the subregion or regional level.*** One of the key conditions for leveraging IDA Regional Window resources is that the Bank Group project should generate spillover effects regionwide. Over the course of the five IDA cycles, there is limited evidence that such spillover effects were achieved, in part because there are no robust indicators in place to track and report such results. More efforts will be needed to develop practical indicators and an appropriate M&E framework for the overall regional initiative over a time frame beyond individual projects.

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Appendix A. Analysis of IDA Regional Window Support to Subregions: Assumptions and Methodologies

Assumptions:

1. The six World Bank Regions were divided into 19 subregions as per United Nations Geoscheme.
2. Angola was categorized as part of Southern Africa subregion and Azerbaijan was categorized as part of Central Asia subregion.

IDA Regional Window *commitments – missing values calculations:*

1. With the overarching criteria that IDA Regional Window can commit up to 2/3rd of the needs of a Bank supported project, IEG utilized the following methods to calculate missing data points:
    a. IDA 13 & IDA 15: we take 2/3 of the commitment amount
    b. IDA 14 & IDA 17: we take the original value and treat missing values as-is
    c. IDA 16: we take 60% of the commitment amount
2. Following the treatment on missing values, the total amounts were validated against the retrospective summaries cleared by the World Bank Group Board of Executive Directors, for IDA13-17.

IDA Regional Window *Commitments, by subregions:*
Based on the above assumptions and methodology, the total Regional Window commitments by subregions was calculated and shared with IDA DFI teams (Table A11).

Table A2. Regional Window commitments by subregions

Region	*IDA Regional Window Commitment Amount ($ millions)*	*Total share over five cycles (%)*
Caribbean	67.1	0.5%
Central America	27.6	0.2%
Central Asia	449.0	3.5%
Eastern Africa	4,548.9	35.5%
Middle Africa	1,964.8	15.3%
Pacific & Oceania	410.3	3.2%
South Asia	1,307.4	10.2%
Southeast Asia	52.7	0.4%
Southern Africa	25.8	0.2%
Southern Europe	54.2	0.4%
Western Africa	3,914.1	30.5%
East Asia	-	0.0%
Western Europe	-	0.0%
Eastern Europe	-	0.0%
North America	-	0.0%
Northern Africa	-	0.0%
Northern Europe	-	0.0%
South America	-	0.0%
West Asia	-	0.0%
Total Commitments	12,821.8	100.0%

Source : IEG, IDA DFI

AFR concentration

IEG review of IDA Regional Window MTRs and other related documents revealed the following key reasons why the regional program is concentrated in Sub-Saharan Africa region.

- The IDA Directors at inception intended for the Regional Window to finance projects in Africa, particularly infrastructure projects in SSA to increase the global competitiveness of the region.
- There is increasing need and demand for regional projects in SSA which is strengthened by the realization of regional integration as a strategic development priority by African leaders.
- IDA Regional Window projects are strongly aligned with the strategic priorities of African regions as outlined in the Country Assistance Strategies.
- RECs in Africa have also embraced the Regional Integration agenda and have benefited from IDA Regional Window funding.
- As long as other regions do not increase their demand for regional projects, majority of IDA Regional Window funding will finance projects in SSA once there are well designed and eligible projects in the region.

The above rationale suggests the strong directionality provided by the Africa RIAS, the confluence of political will from the client countries, RECs, and Bank Group business model adjustments and new mechanisms and strategic prioritization.

Appendix B. Analysis of IDA Regional Window Projects' Spillover Effects

The following section is derived primarily from the analysis of project completion reports, the self-evaluations and the corresponding completion report validations by IEG. The classification and typology of spillover effects – industry, growth and knowledge spillovers - was framed based on a broad literature review from academic journals and International Monetary Fund and Bank Group research.

Project ID and Name	**Intervention type** *(Regional infrastructure, Capacity Development, Regional Public Goods)*	**Regional Benefit Observed** *(Yes /No)*	**PDO**	**Key Outcome Indicators**	**Spillover effects observed** *(Yes /No /Cannot be determined)*	**Type of Spillover effects** *(Knowledge/ Industry/ Growth)*	**Qualitative Review** *(Comments on effects or lack thereof)*
P099833-Cemac Regional Institutions Support Project	RI and ICD	Yes	The objective of the project was to strengthen Central African regional institutions so that they can fulfill their mandates to encourage an expanded, better governed regional market, and a more transparent, better regulated and more competitive financial system which will facilitate the reutilization of oil revenues for investment in Central Africa.	i) increases in the percentage of foreign reserves managed regionally by BEAC; ii)growth of investment in regional projects (primarily infrastructure investments); iii) increases in the percentage of banks meeting key prudential norms	Yes, at appraisal	**Growth** The project will promote economic, including financial, integration of the economies of the CEMAC region thus contributing to faster economic growth and poverty reduction. The project will promote a sounder, deeper and effective financial sector which will encourage the recycling of surplus oil revenues in the region and their investment in regional projects	No clear evidence of spill-over at closing as well as indicators to track it. According to the ICR Page 23, the lack of global experts on the team had implications on the choices of the indicators (PDO and intermediary indicators) used to measure the successful implementation of the program**.** The technicality of the topics, particularly as it regards to monetary policy or banking supervision, would have required the full-time presence of global experts during the identification, design, and preparation

Project ID and Name	**Intervention type** *(Regional infrastructure, Capacity Development, Regional Public Goods)*	**Regional Benefit Observed** *(Yes /No)*	**PDO**	**Key Outcome Indicators**	**Spillover effects observed** *(Yes /No /Cannot be determined)*	**Type of Spillover effects** *(Knowledge/ Industry/ Growth)*	**Qualitative Review** *(Comments on effects or lack thereof)*
							phases to ensure that the design of the project was adequate and implementation actions were technically sound, realistic, and aligned with local realities.
P079749 - 3A-West Africa Transp. & Transit Facilitation Project	Regional infrastructure	Yes	The objective was to improve access by Burkina Faso and Mali to the ports in Ghana and port operations. (2) To facilitate the efficient movement of traffic along the Tema-Ougadougou-Bamako road transport corridor ("the Corridor")	(a) average transit time for containerized imports from the exit at the Port of Tema to Ouagadougou and to Bamako (b) variance in transit time for containerized imports from the exit at the Port of Tema to Ouagadougou and to Bamako	Yes, at appraisal	**Growth** Fostering regional integration by promoting trade through improvement in regional infrastructure	Spill-over at closing: No clear indicators to monitor spill-over effects. Drivers of success/failure: There were both internal and external forces influencing project implementation and outcomes. Some examples of internal forces as outlined in the ICR involved the project design. As a multinational operation versus a true regional operation, the project suffered coordination problems among the three implementing agencies which particularly affected the implementation of the Facilitation components of the

Project ID and Name	**Intervention type** *(Regional infrastructure, Capacity Development, Regional Public Goods)*	**Regional Benefit Observed** *(Yes /No)*	**PDO**	**Key Outcome Indicators**	**Spillover effects observed** *(Yes /No /Cannot be determined)*	**Type of Spillover effects** *(Knowledge/ Industry/ Growth)*	**Qualitative Review** *(Comments on effects or lack thereof)*
							project. Also, the lack of enforcement of the least attractive components. The project did not link the Bank financing or disbursement of funds to any conditionality on the implementation of the more painful Facilitation components. The investments on physical infrastructure, often attractive to the participating countries, were not conditional to the implementation and operationalization of the Facilitation components. The external factors can be attributed to the asymmetry of stakes. The three project participating countries did not share the same level of ownership and did not perceive symmetric project incentives leading to modest outcomes and lack of spillover.

Project ID and Name	**Intervention type** *(Regional infrastructure, Capacity Development, Regional Public Goods)*	**Regional Benefit Observed** *(Yes /No)*	**PDO**	**Key Outcome Indicators**	**Spillover effects observed** *(Yes /No /Cannot be determined)*	**Type of Spillover effects** *(Knowledge/ Industry/ Growth)*	**Qualitative Review** *(Comments on effects or lack thereof)*
P082502: The West African Gas Pipeline Project	Regional Infrastructure	Yes	The objective was to promote the use of cheaper and environmentally cleaner gas from Nigeria in lieu of solid and liquid fuels for power generation and other industrial, commercial uses, and diversifying energy supply sources; and fostering regional economic and political integration that would support economic growth, and the development of the West Africa electricity market	**Economic Indicators:** Decrease in the average wholesale cost of electricity supply in Ghana, Benin, and Togo compared to the "without gas" scenario; Number of large, medium, and small gas customers in Ghana, Benin, and Togo; **Physical Indicators:** Physical completion of regional gas pipeline and of spurs into Ghana, Benin, and Togo, including main connections to target power plants; Expanded volume of energy trade in the region, measured in terms of gas exports from Nigeria; **Institutional and Regulatory Indicators:** Harmonization of the regional institutional, legal, and regulatory framework to increase private sector	Yes, at appraisal	**Growth** Fostering regional economic and political integration that would support economic growth and the development of the West Africa electricity market**.**	Spill-over at closing: No evidence of spill-over at closing. Indicators were targeted at achievement of project outcomes by participating countries and could not track the spill-over on growth outlined at appraisal. Drivers of success: Internal factors like poor supervision from Bank staff may have led to modest outcomes and lack of spill-over.

Project ID and Name	**Intervention type** *(Regional infrastructure, Capacity Development, Regional Public Goods)*	**Regional Benefit Observed** *(Yes /No)*	**PDO**	**Key Outcome Indicators**	**Spillover effects observed** *(Yes /No /Cannot be determined)*	**Type of Spillover effects** *(Knowledge/ Industry/ Growth)*	**Qualitative Review** *(Comments on effects or lack thereof)*
				participation in the gas sector			
P090656 ECSEE APL2 (ALBANIA)	Regional Infrastructure	Yes	The project would provide investment support and technical assistance for Albania. The objective of the investment is to extend the lifetime and improve the quality, reliability, safety and efficiency of the bulk power transmission system by replacing ageing existing facilities with new ones.	ECSEE APL: Regional market liberalization	Yes (at appraisal and closing)	**Industry**	The higher-level objective of ECSEE APL program: Development towards a functioning regional electricity market in South East Europe was achieved substantially. Drivers of success can be attributed to project team's efforts to address challenges and restructure project to achieve project objectives. External drivers can also be attributed to government's introduction of a number of important sector and electricity market reforms in compliance with the Athens Treaty Requirements.
P094084 3A-W. Af Agric Prod Prgm APL WAAPP	Institutional Capacity Development	Yes	The objective of the project (first phase of the support program to the WAAPP) is to generate and disseminate improved technologies in the participating countries' top priority areas, as identified by CORAF. These include roots and tubers in Ghana; rice in Mali; and	(i) at least three improved technologies in the participating countries' top priority areas have been released by these countries at the end of the phase. (ii)out o f t he three improved	Yes, at appraisal and at closing	Knowledge	Project generated knowledge spill-over through Generation and dissemination of improved technologies across the region beyond the participating countries. The project had a well - designed

Project ID and Name	**Intervention type** *(Regional infrastructure, Capacity Development, Regional Public Goods)*	**Regional Benefit Observed** *(Yes /No)*	**PDO**	**Key Outcome Indicators**	**Spillover effects observed** *(Yes /No /Cannot be determined)*	**Type of Spillover effects** *(Knowledge/ Industry/ Growth)*	**Qualitative Review** *(Comments on effects or lack thereof)*
			cereals in Senegal. The region's consumers, particularly those affected by extreme poverty, are the ultimate beneficiaries of the WAAPP. Agricultural producers and agribusinesses, as users of the improved technology, are the primary beneficiaries of the program. These are also the key participants, along with researchers, extension agencies and universities (in adhering to the agricultural knowledge information system (AKIS) conceptual framework), in the generation and dissemination of technology that is directly supported by the program.	technologies released by each country, at least one should show improvement in yield by 15 percent over the control technology.			logical chain which led to over achievement of project outcomes and objectives. The national agricultural productivity programs already in place in the three countries had generated knowledge, experience and networks and had laid the groundwork for a regional project such as WAAPP to be designed and to be implemented largely through already existing project-implementing agencies.

Appendix C. Frontier Analyses

Background

B.1. Regional integration has long been viewed as a key strategy for fostering economic growth and reducing conflicts. Despite historically varying degrees of success and the recent renaissance of nationalism in some parts of the world, policymakers continually argue that deeper regional integration constitutes a crucial factor in creating an environment conducive to sustainable economic growth, peace, and security (UNESCAP 2016; ACET 2017; EU 2018; UNECA 2018).

Despite the prominence of efforts aimed at increasing regional integration on the current agenda of many international development organizations, there is very limited empirical evidence that allows to quantify and compare integration levels across different regions and map achieved progress against stated goals. While the economic literature comprises many studies that provide detailed insights on single dimension of regional integration (e.g., focusing on trade or migration), policymakers are often in need of more comprehensive, yet compact, measures of integration.[1]

This Appendix addresses this need in two ways. **First**, a multidimensional index, developed only for the purposes of this synthesis, is constructed to quantify regional integration outcomes. The obtained Composite Regional Integration (CRI) Index aggregates information from 11 different empirical indicators into a single composite measure, covering five key dimensions of regional integration: trade integration, financial integration, regional investment and production networks, movement of people, and peace and security. By using standardized normalization and aggregation methods, the CRI Index allows to quantify and rank regions and subregions across all geographical parts of the world according to their currently achieved degree of regional integration.[2]

Second, the CRI Index is used to estimate empirical magnitudes of untapped regional integration potential across the 19 considered subregions. This is done by combining the CRI Index together with proxies of the enabling environment for regional integration (capturing enabling factors related to trade openness, cross-border infrastructure, and business regulation environment) in a data envelopment analysis (DEA).[3] The obtained results complement the analysis, because a simple comparison of achieved regional integration levels based on the CRI Index may not do full justice to the individual conditions faced by each subregion.

There are several ways in which the findings in this paper can contribute to evaluating the World Bank's efforts in strengthening regional cooperation and economic integration. **First**, the analysis can help to assess the Bank's achievements in targeting subregions with certain needs and characteristics, e.g., subregions that are performing well despite low absolute levels of integration or subregions that are still far away from reaching their estimated integration potential. **Second**, the analysis provides insights about which enabling factors (i.e., trade-related political institutions, physical infrastructure, or private sector regulations) are particularly strong or weak in certain subregions. **Finally**, these insights can be used to (a) evaluate the relevance and appropriateness of current interventions in each subregion, (b) review the "frontier" regions or subregions with the most potential, and (c) decide on the types of interventions that future programs should prioritize.

The remainder of the paper is structured as follows. Section II explains the construction of the CRI Index and presents the results of a global comparison of regional integration levels along the considered

dimensions. Section III uses the CRI Index in a non-parametric frontier analysis to estimate magnitudes of untapped regional integration potential across 19 subregions. Section IV concludes.

Composite Regional Integration Index

Figure B1 shows a schematic illustration of the construction of the CRI Index. The final composite index captures five dimensions of regional integration: trade integration, financial integration, regional investment and production networks, movement of people, and peace and security. Each dimension comprises two or more individual indicators (e.g., the trade dimension is composed of intraregional exports and intraregional imports). These indicators are obtained from empirically-observed variables measuring different aspects of regional integration.

Figure B1: Composite Regional Integration Index

In contrast to other studies in this context, we distinguish between ultimate regional integration outcomes (e.g., actual flows of goods and people across borders) and intermediate outcomes which can be perceived as means for achieving higher ultimate outcomes (such as signed FTAs, available infrastructure, and prevailing business regulations).[4]

While the latter are used as part of the analysis in Section III (as proxies of the 'enabling environment' for regional integration), the CRI Index is designed to capture subregions' performance in terms of ultimate integration outcomes.

Methodology

When it comes to the construction of composite indices, no unique standard procedure has been established in the literature. Rather, the applied methods must be adapted to the specific context and purpose at hand (De Lombaerde et al. 2008). This is reflected in our analysis, which is based both on methods that are specifically designed to capture regional integration outcomes as well as on standard normalization and aggregation methods that are also used in the construction of other well-known composite indices (e.g., the Doing Business Index or the Human Development Index). This section provides a detailed description of the methodology underlying the construction of the CRI Index, which builds upon the approach developed in Naeher (2015) and is in line with the guidelines laid out by the OECD (2008). The robustness of the resulting estimates to alternative specifications is discussed as part of the robustness tests in Appendix D.

Measuring regional integration. Different to composite indices in other contexts, the construction of a multidimensional index of regional integration outcomes requires measures based on bilateral (dyadic) data rather than national data. There are several possible ways to construct such measures. In order to guarantee comparability across the different dimensions of the composite index, we include only variables that can be measured as intraregional shares of a bilateral data matrix.[5] Based on a country-by-country matrix containing information about flows F_{ij} between countries i and j, the intraregional share is defined as the fraction of flows between the countries in subregion R (denoted F_{RR}) and total flows between the countries in R and all countries in the world (F_{RW}). Formally, intraregional shares are calculated as

$$\frac{F_{RR}}{F_{RW}} = \frac{\sum_{i \in R} \sum_{j \in R, j \neq i} F_{ij}}{\sum_{i \in R} \sum_{j \in W, j \neq i} F_{ij}} \tag{1}$$

Normalization. To facilitate aggregation into an overall index, the data must be normalized such that higher values indicate higher degrees of regional integration and all variables feature a comparable range of values. For those sub indicators representing intraregional shares of bilateral variables, the former is already achieved. For dimension V. (peace and security), the data is inverted by subtracting the respective scores from the highest possible value (10). Regarding the range of values, several possible methods exist for rescaling, each featuring its own set of advantages. We apply standard min-max rescaling, which ensures that all variables range between 0 and 1.[6] For each subregion i in the overall sample N, indicator I is normalized using the formula

$$I_i^* = \frac{I_i - \min_{i \in N}(I_i)}{\max_{i \in N}(I_i) - \min_{i \in N}(I_i)} \tag{2}$$

Weighting and aggregation. The construction of the CRI Index involves two steps of aggregation. First, the overall composite index incorporates information along five dimensions of regional integration (as shown in Figure 1). Second, each of these dimensions is composed of multiple individual indicators (mostly representing intraregional shares of bilateral variables). At both levels of aggregation, an equal weighting scheme is applied to combine the respective sub indicators. This facilitates the interpretation of the results and is in line with many other studies that construct composite indices.[7] The Asian Development Bank and the African Development Bank have constructed similar composite indices.

Aggregation follows the scheme illustrated in Figure 1, using the variables listed in Table 1 and the normalization and weighting schemes described above. Since each dimension enters the index with equal weight, the resulting score of the CRI Index can be interpreted as the average performance of a given subregion along the considered dimensions of regional integration. The same applies to each of the five dimensions individually, across the respective sub indicators. Alternative weighting schemes (including principal component analysis) are explored as part of the robustness tests.

Data and variables

The number of possible dimensions of the CRI Index is limited by the availability of empirical measures of regional integration outcomes. For indicators that can be represented as intraregional shares of bilateral data, the number of potential variables to be included is even more restricted. Nevertheless, several key dimensions of regional integration can be covered this way. As shown in Figure 1, the CRI Index is composed of 11 individual sub indicators measuring different aspects of regional integration along five dimensions: (I.) trade integration, (II.) financial integration, (III.) regional investment and production networks, (IV.) movement of people, and (V.) peace and security.[8] Table B1 provides a complete list of the variables used in the analysis and respective data sources.

For most of the used variables, data is available for 2017 and/or 2016. In these cases, we either use the most recent year available or combine the information from both years to achieve better coverage (see Appendix B for details). For indicators III.b and IV.c, the most recent data we could obtain are from 2015 and 2012, respectively. In case of the latter, we use the average annual growth over the previous five years to linearly extrapolate the data to 2017.

Based on data availability, the sample consists of 193 economies, grouped into 19 subregions spanning all geographical regions of the world. In defining subregions, we follow the classifications of the UN (2017).[9].

Limitations: It should be noted that looking at geographical subregions may be seen as unconventional, as these (i) differ in size and (ii) are not always in line with the political objectives of the corresponding countries. It was therefore considered to perform the analysis instead for regional economic communities (RECs), such as ASEAN, EU, and SADC. Using RECs, however, would lead to methodological difficulties, as the analysis would have to deal with countries that are not part of any REC as well as with countries that are part of multiple RECs (at the same time, the issue of different sizes of regional groupings would remain, as the number of member countries varies widely across RECs). In order to be able to assess regional integration outcomes globally for all countries (subject to data availability), this evaluation worked with geographical subregions, as this provides a complete set of country groupings where each country can be assigned to exactly one subregion.

In interpreting the obtained results, the following limitations of the approach should be kept in mind. First, the DEA estimates are exclusively based on currently available resources and conditions, not on future scenarios. Thus, the analysis cannot provide forecasts of integration outcomes under possible scenarios of changes in political or economic conditions. Second, the obtained estimates relate only to the dimensions of regional integration captured by the CRI Index, which do not necessarily imply effects on all final target variables such as human development or income growth. Finally, given that the considered subregions do not represent perfectly comparable units of observation, all quantitative results should be interpreted with that view. The obtained findings and derived implications should therefore be seen as suggestive rather than conclusive, hopefully serving as a first step toward a more comprehensive line of analysis going beyond the scope of this report.

Table B1. Variable Descriptions and Data Sources

Dimension	Indicator		Description	Data source and year
Panel A: Ultimate regional integration outcomes (CRI Index, DEA outputs)				
I. Trade integration	I.a	Intraregional goods exports	Percentage of intraregional goods exports compared to total goods exports	IMF - Direction of Trade Statistics (DOTS), 2017

Table B1. Variable Descriptions and Data Sources

Dimension	Indicator		Description	Data source and year
	I.b	Intraregional goods imports	Percentage of intraregional goods imports compared to total goods imports	IMF - DOTS, 2016/17
II. Financial integration	II.a	Intraregional equity liabilities	Percentage of intraregional cross-border equity liabilities compared to total cross-border equity liabilities	IMF - Coordinated Portfolio Investment Survey (CPIS), 2016/17
	II.b	Intraregional debt liabilities	Percentage of intraregional cross-border debt liabilities compared to total cross-border debt liabilities	IMF - CPIS, 2016/17
III. Regional investment and production networks	III.a	Intraregional FDI positions	Percentage of intraregional inward FDI positions compared to total inward FDI positions	IMF - Coordinated Direct Investment Survey (CDIS), 2015/16; UNCTAD - Bilateral FDI Statistics 2014
	III.b	Intraregional intermediate goods imports	Percentage of intraregional inter-mediate goods exports compared to total intraregional goods exports	World Integrated Trade Solutions (WITS), 2015; UN - Commodity Trade Statistics (COMTRADE), 2017
IV. Movement of people	IV.a	Intraregional migration	Percentage of intraregional outbound migration compared to total outbound migration	UN Population Division - Trends in International Migrant Stock, 2017
	IV.b	Intraregional remittances	Percentage of intraregional remittances inflows compared to total remittances inflows	World Bank - Migration and Remittances Data, 2017
	IV.c	Intraregional tourism	Percentage of intraregional outbound tourists compared to total outbound tourists	UNWTO - Yearbook of Tourism Statistics, 2012 (extrapolated to 2017)
V. Peace and security	V.a	Absence of conflict	Subregional mean of GCRI scores for security risk area (current conflict situation, history of conflict)	EU - Global Conflict Risk Index (GCRI), 2017
	V.b	Social cohesion and security	Subregional mean of GCRI scores for social risk area (social cohesion and diversity, public security and health)	EU - GCRI, 2017
Panel B: Intermediate outcomes/enabling environment (DEA inputs)				
Trade openness			Percentage of country pairs within subregion that have signed FTAs	Design of Trade Agreements Database (DESTA), 2017
Cross-border infrastructure			Subregional mean of Logistics Performance Index (overall score)	World Bank - Logistics Performance Index (LPI), 2016
Business regulation environment			Subregional mean of Doing Business Index (distance to frontier score)	World Bank - Doing Business Index (DBI), 2017

FDI = foreign direct investment, FTA = free trade agreement, DEA = data envelopment analysis.

A. In some cases, information in the original datasets is missing for some economies, such that the affected subregions are only represented by a subset of the corresponding economies. To minimize potential biases, some attempts were made to adjust for missing values, e.g., by imputation.

Background on conflict[10]

Conflict and Lack of Regional Integration. Risk of a conflict and level of regional integration are two factors closely linked to achieving WBG's twin goals (WBG 2018a). Conflicts cause protracted, severe disruption

of economic activities and infrastructure, and are key constraints to development in many countries (Calì 2015). Such economies cannot produce the necessary levels of income and welfare to help end extreme poverty and boost shared prosperity. To that end, for example, IDA has allocated over $11 billion in post-conflict reconstruction assistance to "fragile and conflict affected situations" since 2000.

In a 2015 World Bank report, authors suggest that by "2030 more than 90 percent of world's extreme poor are projected to live in fragile and conflict affected states" (Oliver and Cali 2015). An additional complicating factor is that 90% of the conflicts between 2000 and 2010 occurred in countries that had already experienced a recent conflict, with almost half of the post-conflict countries relapsing back to conflict within 10 years (WBG 2011). The situation is especially worrying in sub-Saharan Africa, where most countries at risk of conflict are situated.[11] This prognosis warrants a greater emphasis on the study and analysis of conflict in relation to integration and trade.

Furthermore, resurgence of nationalistic rhetoric and protectionism in recent years has adversely affected trade, which in turn increases the risk of conflict, especially among neighbors (WBG 2018b). This is especially true for small, landlocked, and FCV countries, which are disproportionately more susceptible to loss of income and welfare as part of protectionist measures and lack of integration.

To some extent, conflict and lack of integration are mutually reinforcing factors that may trap countries in a cycle of violence, halting development. Conversely, improved trade and reduced conflicts can promote greater growth and reduce poverty (Venables et al. 1999). Fostering regional integration then becomes one of the tools to solve this problem in a bid to achieve WBG's twin goals.

Global Conflict Risk Index. One of the available resources for quantifying conflict risk is the Global Conflict Risk Index (GCRI) – an early warning system designed to provide a global risk assessment based on economic, social, environmental, security and political factors (Halkia et al. 2017). It is an index of the statistical risk of violent conflict occurring in the subsequent 1 to 4 years, exclusively based on quantitative indicators from open sources. To determine the intensity of a conflict, the GCRI uses a scale from 0 to 10, with an intensity level of 0 equivalent to no conflict being present in the country. GCRI offers a comprehensive methodology that isolates three dimensions of conflict: the risk of confrontation with other states, the risk of internal conflicts over government control, and the risk of internal conflict over issues apart from government power itself, such as resources (GCRI 2017).

Each of the 5 factors are further granulated into 24 variables in total, deemed as good determinants for forecasting the risk of conflict in the short-term. The security factor, for example, is subdivided into (1) recent internal conflict, (2) neighboring conflict, and (3) years since highly violent conflict variables. Similarly, the social factor is determined by (1) corruption, (2) ethnic power change, (3) ethnic competition, (4) transnational ethnic bonds, and (5) homicide rate (Halkia et al. 2017).

Regional integration and trade can not only ameliorate situation economically, but in some instances, produce spillover effects in the security and social realms of the country and the region at large. Under specific conditions, trade and trade policy can help prevent conflicts (Oliver and Cali 2015). A 2015 World Bank report titled "Trading Away from Conflict," discusses the opportunity cost effect, which occurs when trade translates into higher real income, and people are less likely to engage in internal conflict.[12] A potential pitfall to be cognizant about is the rapacity effect, when people fight over valuable resources (mainly oil and minerals). Evidence shows that rapacity effect vanishes for countries with high levels of

accountability, which can also be fostered through capacity development and deeper integration (Oliver and Cali 2015). The report concludes on how to best utilize trade policy to ease conflicts in fragile states, which include protecting producers, consumers, and workers from adverse trade shocks, promoting trade with neighbors, and supporting labor-intensive exports (Calì 2015).

WBG Theory of Change. WBG's two-tier Theory of Change (ToC) provides with a comprehensive description and illustration of how regional integration is expected to occur, with clear inputs, outputs, outcomes, underlying assumptions, and potential hazards. One of the desired final outcomes is a "decrease in regional conflicts, political risk, and cross-border constraints." ToC also outlines three main WBG functions to achieve the specific outcomes – one of an enabler, financier, and convener. This, in effect, leverages and amalgamates the Bank's comparative advantages to complement the RI work of other MDBs, RECs, and other stakeholders.

The Bank's enabler role is envisioned primarily as one of providing quality analytical work, access to global knowledge as well as ability of mobilizing global experts, and consistent long-term engagement with the clients. Alignment of local, national, and regional priorities as well as greater focus on the local context are existing gaps. GCRI can serve as a valuable resource in informing the existing local and regional security risks to better design and execute RI projects.

The financier's function assumes multisector approach, availability of diverse investment instruments, ability to crowd in public and private funding, and global engagement with landlocked, small states, and FCVs. An overall insufficient engagement on RI activities of the Bank, especially in areas with greater need, is deemed as one of the existing challenges. Again, GCRI can be used as one of the inputs in identifying potential "hot spots" and designing interventions to deepen cross-country integration with the aim of reducing the risk of a conflict.

Finally, in its convener's capacity, the Bank plans to leverage its comparative advantage of political neutrality and strengthening the nexus of Country Priorities and Regional Agenda to champion processes, supplement financing for regional public goods, and promote long-standing partnerships. A couple of the gaps identified are asymmetric political willingness and incentives and lack of knowledge dispersion about RI best practices among clients. More knowledge transfer about the benefits of RI and careful design of incentives to entice countries to engage in RI activities can have positive effects in strengthening peace and prosperity regionally.

Non-Economic Benefits. GCRI can not only inform the design of a particular RI project, given the local idiosyncrasies, but also serve as an indicator of its effectiveness in the evaluation stage. A decrease in the risk indices over time may suggest some causal relationship between the RI programming and intensity of conflict. Such an approach may demonstrate the non-economic benefits and spillover effects of regional integration, including in the social and security dimensions. In a bid to ensure transparency and scientific integrity, GCRI technical reports include all the information necessary to independently calculate indices for the year(s) needed and allow for tracking and measurement of conflict risk over time.

Notwithstanding the economic benefits that RI can provide, it is also important to keep in mind that carefully-designed projects can also have positive spillover effects in the security, social, and even environmental dimensions. WBG can play in important role in championing such initiatives globally by

leveraging its comparative advantages, and as a result, creating both economic and non-economic benefits for all the parties involved.

Global comparison of regional integration levels

Figure 2 shows the resulting ranking of subregions according to the CRI Index (exact numerical values are provided in Table B.1). The two subregions with the highest CRI scores are Western Europe (0.78) and East Asia (0.71). After a considerable gap, Southeast Asia (0.50), Northern Europe (0.47), and North America (0.45) follow next. At the lower end of the ranking are Central Asia (0.16), Northern Africa (0.11), and Middle Africa (0.06). The last two subregions feature CRI scores below one third of the average CRI Index across all 19 subregions, which equals 0.34.

Figure 3 depicts results for geographical regions, where the thick squares represent simple averages and the lines indicate ranges of obtained CRI scores across those subregions belonging to the same region (bounded by the minimum and maximum value within each region). In terms of average CRI levels, Europe (0.50) achieves the highest result, Asia (0.36) and the Americas (0.33) are close to the overall sample mean across all subregions (0.34), and Africa (0.21) lags behind. The gap between Africa and Europe becomes even more apparent when looking at the depicted ranges. While all regions feature considerable heterogeneity in regional integration levels, the most integrated subregion in Africa (Southern Africa) has a lower CRI score than the least integrated subregion in Europe (Eastern Europe). Asia shows the by far largest range of CRI scores, being the only region that comprises subregions both at the very top and bottom end of the CRI Index.

Overall, the results in Figures B2 and B3 appear to support the view that economies in Europe (the Western European economies belonging to the European Union) constitute the highest level of regional integration worldwide (see Freund and Ornelas 2010; Baldwin and Wyplosz 2006). However, while the gap between Europe and other regions may be large in terms of institutional integration (e.g., following the definition of Balassa 1961), the findings in Figure B2 suggest that in terms of "actual" integration outcomes as measured by the intraregional shares included in the CRI Index, some subregions in Asia are currently achieving outcomes that are comparable to those achieved by European subregions.[13]

Figure B4 shows the resulting rankings of subregions for individual dimensions of regional integration. Disaggregating the results in this way reveals that Western Europe is leading the rankings for trade and financial integration as well as for regional investment and production networks. East Asia performs very well in terms of trade integration, investment and production networks, and movement of people, such that the lower CRI score compared to Western Europe can be mainly attributed to the different performance in financial integration and peace and security.

Middle Africa, Northern Africa, and Central Asia are among the lowest ranked subregions for almost all the five dimensions, suggesting that the low values of the overall CRI Index for these subregions are not driven by any particular dimension. While the two subregions that comprise mainly island states, the Caribbean and Pacific & Oceania, are ranked among the bottom half for most dimensions, they perform very well in terms of dimension V (peace and security). The opposite holds for Eastern Europe, which achieves relatively high scores for dimensions I to IV, but ranks low for dimension V. As shown in Figure B4, there is a large gap in financial integration between the highest ranked subregion (Western Europe) and all other subregions. One might worry that some of the results are primarily driven by the high value of Western Europe for financial integration. However, as shown in Appendix D, the overall ranking of subregions remains almost unchanged when different weighting schemes are applied, suggesting that the results are not merely driven by one dimension.

It should be noted that the ranking for dimension IV (movement of people) differs relatively strongly from the rankings for the other dimensions. The low scores for North America and some of the European subregions for dimension IV are likely due to the high global mobility that people in these subregions enjoy, rather than to constraints on movement within these subregions. For example, small intraregional shares for migration in richer subregions may be because individual migration decisions in these subregions are not restricted to neighboring countries (i.e., within the same subregion), as might be the case for many people in poorer and less-developed subregions.

Figure B2. CRI Index: Global Comparison

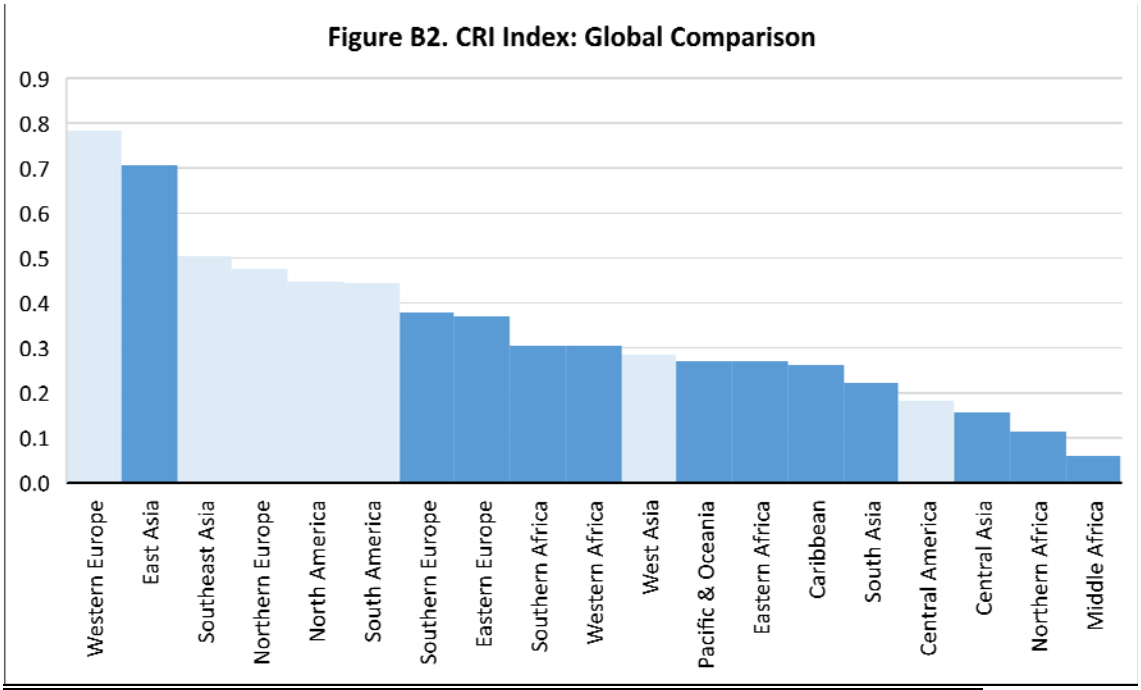
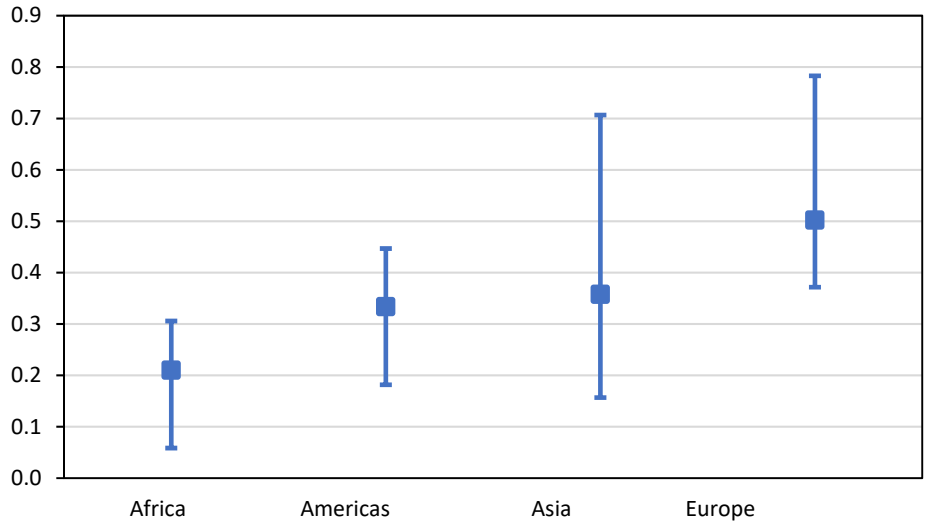


Figure B3. CRI Index: Ranges for Geographical Regions



Notes: For each geographical region, the minimum (lower line), maximum (upper line), and average value (thick square) of the CRI Index across the corresponding subregions are shown.

Estimation of untapped regional integration potential

We now turn to an empirical analysis that uses the CRI Index in combination with additional data in a so-called data envelopment analysis, to assess the degree of untapped regional integration potential in each of the 19 subregions. Following the approach outlined in Naeher (2015), this is accomplished by first estimating regional integration potential for given levels of enabling factors, and then calculating the extent to which this potential is currently being reached by individual subregions. The analysis thus goes beyond the simple comparison of absolute levels of regional integration performed in Section II and provides an additional perspective on the status of integration in the considered subregions. The results are obtained along the following lines.

First, we calculate an empirical production possibility frontier for regional integration outcomes. The frontier specifies the potential level of regional integration (measured by the CRI Index) as a function of intermediate factors needed to foster regional integration (i.e., the "enabling environment"). We then use the estimated frontier to rate the performance of subregions in achieving integration relative to their empirical potential. This allows to identify those subregions that, relative to other subregions facing a similar enabling environment, are currently achieving relatively high levels of integration, and those subregions that are apparently falling short of their potential.

The results obtained from this analysis complement the insights in Section II, because a simple comparison of achieved levels of regional integration as performed above may not do full justice to the individual conditions faced by each subregion. In the following, we first explain the general intuition and underlying assumptions of data envelopment analysis, then describe how the `enabling environment' for regional integration is measured, and finally present the results.

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[1] The recent wave of policy-oriented studies on composite measures of regional integration is evidence of this (e.g., De Lombaerde et al. 2008; African Union Commission, African Development Bank, and UNECA 2016; ADB 2017; Claveria and Park 2018).

[2] The term `subregion' refers to a set of (typically bordering) economies located in the same geographical region (see Appendix A for classifications). To simplify notation, we use the term `regional integration' even when talking about subregions.

[4] Other composite indices pool these two sets of outcomes together, e.g., the Africa Regional Integration Index (African Union Commission, African Development Bank, and UNECA 2016) and the Asia-Pacific Regional Integration Index (Huh and Park 2018).

[5] The only exception is dimension V. (peace and security), for which no bilateral data could be identified. Other possible measures of regional integration outcomes include intraregional correlation coefficients and intensity indices.

[6] The same method is used in the construction of other well-known composite indices, such as the Africa Regional Integration Index, Doing Business Index, and the Unit Nation's Human Development Index.

[7] This includes popular indices such as the Human Development Index and the Africa Regional Integration Index, as well as indices constructed with the sole purpose of using them in data envelopment analysis (e.g., Afonso et al. 2005; Herrera and Pang 2005). In Afonso et al. (2005), the use of an equal weighting scheme is justified by stating that this weighting "is quite straightforward and economically intuitive (even though it is still somewhat ad hoc). It avoids the problem of lack of economic justification of a more complex statistical approach."

[8] These categories are broadly in line with other studies on regional economic integration, e.g., African Union Commission, African Development Bank, and UNECA (2016), Huh and Park (2018), and Naeher (2015).

[9] The only exception is Azerbaijan, which we include in Central Asia to be more in line with World Bank classifications.

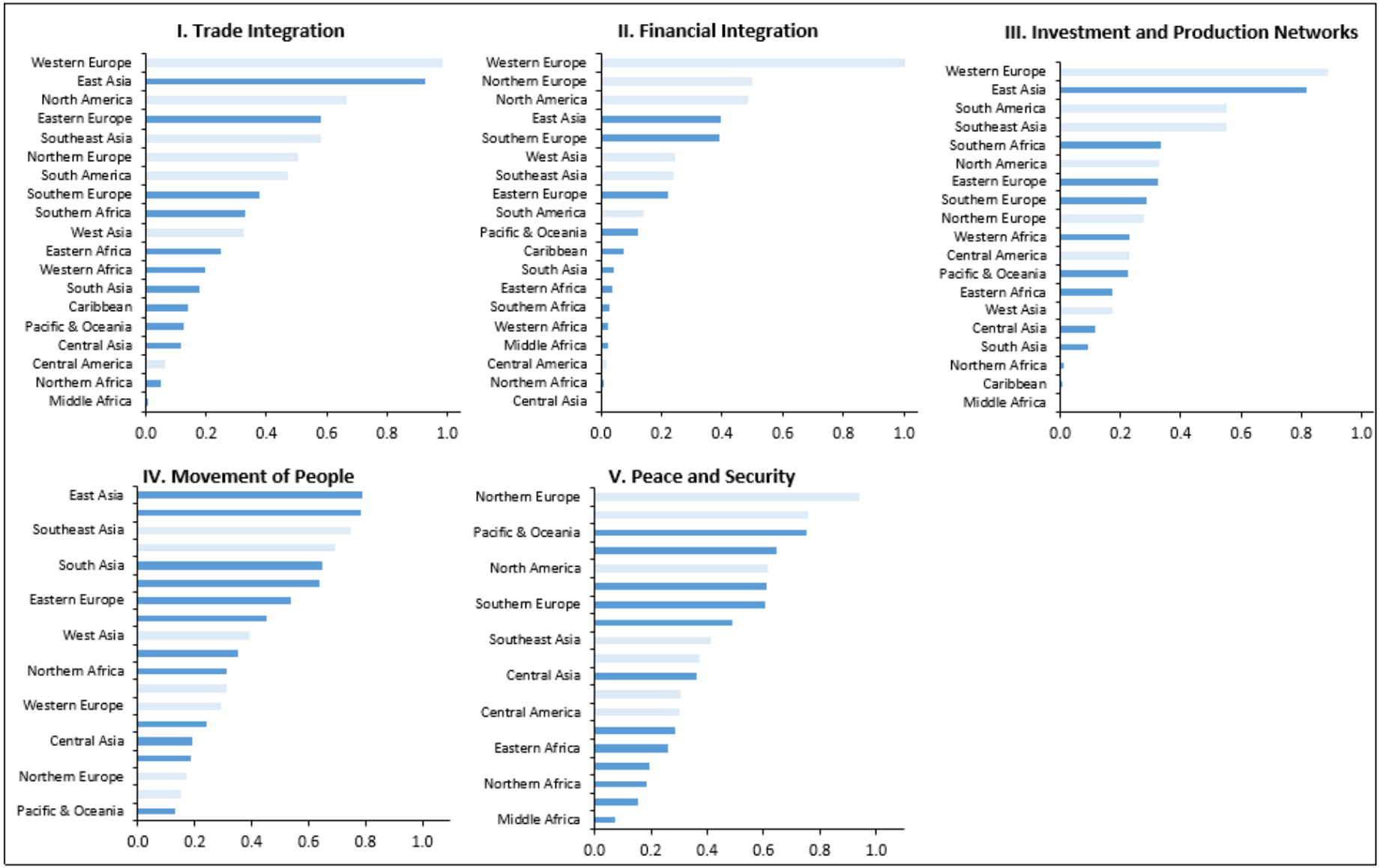
[10] The content of this subsection was provided by Armen Sahakyan.

[11] Based on available WDI data for 22 fragile countries from the OECD list. The difference was statistically significant at the 0.05 level.

[12] Cross-country evidence does not support this assertion. However, opportunity cost effect can also apply to neighboring countries.

[13] Balassa (1961) defines five stages of regional integration: free trade area, customs union, common market, economic and monetary union, and full political union.

Figure B4. CRI Index: Dissagregated by Dimension



Notes: Subregions with special relevance for the IEG's evaluation study are marked in dark blue.

Data envelopment analysis

Data envelopment analysis (DEA) is a nonparametric method for estimating production possibility frontiers that can be used to measure relative efficiency rates across sets of comparable units of observation.[1] In its simplest form, DEA assumes the existence of a convex production possibility set and estimates the frontier as the maximal attainable level of output for a given input level. Efficiency of an observed input–output combination is measured as the distance to the estimated frontier. For example, a unit is considered to be relatively inefficient if another unit uses less or an equal amount of inputs to generate more amount of output. The obtained efficiency scores are normalized to range between 0 and 1, where units located on the frontier are assigned the maximum value of 1.

In the context of regional integration, the key assumption underlying DEA is that subregions that feature similar levels of enabling factors for integration (such as, e.g., quality of cross-border infrastructure or institutional arrangements that facilitate trade and multinational private sector activities) should in principle be able to achieve similar levels of regional integration outcomes. Estimated efficiency scores below one can thus be interpreted as untapped potential in regional integration. In the analysis, untapped regional integration potential is therefore defined as the distance between the currently achieved level of regional integration (measured by the CRI Index) and the theoretically possible level (corresponding to the estimated frontier).

It is important to note that the obtained estimates are based on currently available resources and conditions, not on potential future developments. In particular, the analysis does not seek to forecast integration outcomes under possible scenarios of changes in political or economic conditions. Instead, the analysis compares levels of integration outcomes across different subregions and identifies those subregions that, relative to other subregions with a similar enabling environment, are currently achieving lower levels of integration than they should potentially be able to. Furthermore, it should be noted that the obtained estimates relate only to the dimensions of regional integration captured by the CRI Index and do not provide direct implications for potential welfare or growth effects.[2]

[1] DEA has been applied to a wide range of fields, including efficiency of expenditures on health and education (Clements 2002; Herrera and Pang 2005), agricultural efficiency (Latruffe et al. 2004), and overall public-sector efficiency (Afonso et al. 2005, 2013; Gupta and Verhoeven 2001). In Naeher (2015), DEA is used in the context of regional economic integration in Asia.

[2] Implications of economic integration in this direction are discussed elsewhere (e.g., Baldwin and Venables 1995; Sapir 2011).

Appendix C
Frontier Analyses

Enabling environment

In estimating untapped regional integration potential, DEA treats the CRI Index as output variable and sets it in relation to empirical measures of the enabling environment (DEA input variables). In the context of this study, the enabling environment consists of factors that facilitate higher levels of ultimate regional integration outcomes as captured by the CRI Index. While there are many potential factors that may affect regional integration outcomes, including geographical features (e.g., distance and natural characteristics) and cultural background (e.g., common language), we focus on factors that are more directly in control of governments and international policy makers. In particular, the analysis considers factors related to trade openness, cross-border infrastructure, and business regulation environment. These are chosen, because they represent key enabling factors behind the three processes that are often seen as driving regional integration.[1]

Market-led processes. According to many studies, part of regional integration arises naturally because of economic forces in that the benefits of agglomeration (e.g., economies of scope, scale, and speed) outweigh the costs of agglomeration, such as congestion (McKay et al. 2005; Marinov 2015). Such market-led processes are often driven by reductions of barriers to trade and investment, as well as by the development of regional transportation and communication infrastructure (Francois and Manchin 2013). To account for market-led processes in the analysis, we include regional average scores of the World Bank's Logistic Performance Index (LPI) as one of the proxies for the enabling environment. The LPI captures a wide range of relevant aspects in this context, including the quality of trade and transport-related infrastructure, efficiency of customs clearance processes, and various other export and import-related conditions such as ease of arranging shipments, quality of logistics services, and ability to track consignments.

Institution-led processes. Another driving force of regional integration is based on institutional arrangements, such as regional trade agreements, customs unions, and bilateral free trade agreements between economies within the same region. To account for institution-led processes in the analysis, we include a measure of intraregional FTA coverage, which is calculated as the percentage of country pairs within each subregion that have signed free trade agreements. The data comes from the Design of Trade Agreements Database (Dür et al. 2014), which provides information for around 730 preferential trade agreements, covering various types of agreements that liberalize trade, including bilateral, regional, and inter-regional agreements (we include only those agreements that are listed by the WTO).

Private sector-led processes. According to many studies, a third driving force behind regional integration consists of private sector-led initiatives, such as the establishment of regional production networks through multinational corporations and development of subregional economic zones (Peng 2002; Yoshimatsu 2002).[2] To account for private sector-led processes in the analysis, we include subregional average scores of the World Bank's Doing Business Index (DBI) as a third proxy for the enabling environment. The DBI scores capture various important factors in this context, including business entry regulations, financing constraints, and taxation issues.

To facilitate the computation of DEA, the three identified variables capturing enabling factors for regional integration are combined into a single measure (the "DEA input index"). This is done by applying the same aggregation methods as used in the construction of the CRI Index, i.e., normalization via min-max rescaling and aggregation based on equal weights (the obtained values for each sub indicator are reported in Table B.1). Overall, the DEA input index should be thought of as a proxy composite measure of the broader enabling environment for regional integration faced by individual subregions.

Empirical results

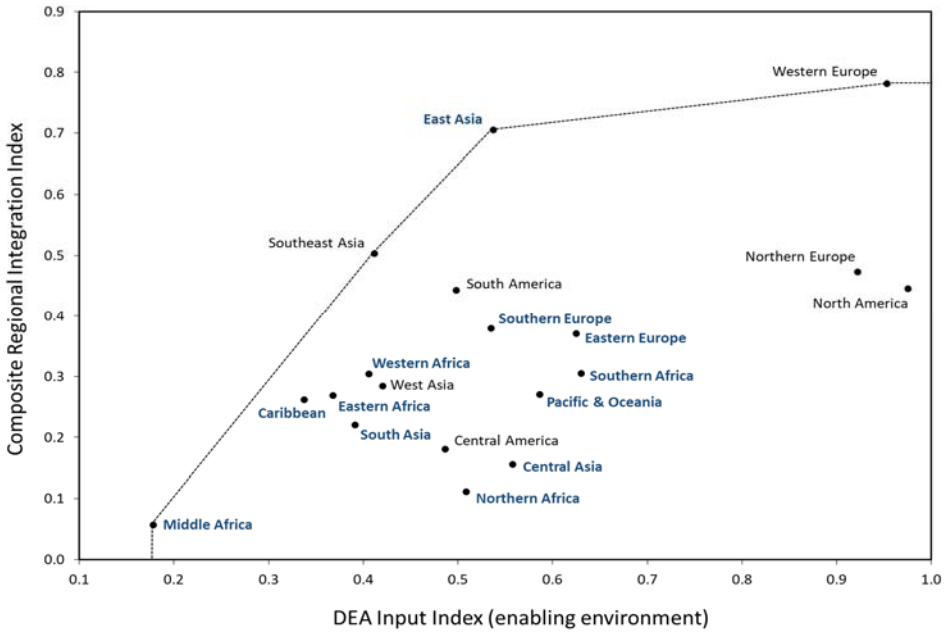
The obtained values of the DEA input index for each subregion are listed in Table 2. According to the results, the subregions with the strongest enabling environments for regional integration are North America (0.97), Western Europe (0.95), and Northern Europe (0.92). The subregions with the weakest enabling environments are Eastern Africa (0.37), the Caribbean (0.34), and Middle Africa (0.18). Looking at simple averages across geographical regions, Europe (0.76) obtains the highest score, while the Americas (0.57) and Asia (0.48) are ahead of Africa (0.42).

Figure B5 plots the CRI Index over the DEA input index and shows the resulting production possibility frontier for regional integration (dotted line). For the considered sample of 19 subregions, the frontier turns out to be defined by four subregions. At the lower end of the enabling environment, the frontier is defined by Middle Africa, which is mainly because there are no other subregions with similarly small values of the DEA input index. In the middle of the sample, the frontier is defined by Southeast Asia and East Asia, both of which outperform many other subregions with similar levels of the DEA input index. At the upper end, the frontier is defined by Western Europe, which achieves a much higher CRI score than the two subregions with similar enabling environment, North America and Northern Europe.

Table B2 presents the resulting estimates for untapped regional integration potential (DEA scores), along with each subregions rank. Larger ranks correspond to smaller scores and indicate higher potential for increasing regional integration levels based on current conditions (an estimated score of one indicates the subregion is located on the frontier).[3] Most of the subregions achieve scores between 0.4 and 0.7, suggesting that these subregions are currently achieving around 40 to 70 percent of their potential integration levels.[4] South America and the Caribbean obtain scores larger than 0.65, which suggests that these subregions are performing considerably well given their enabling environments. The three subregions with the largest untapped integration potential are Central America, Central Asia, and Northern Africa, which, according to the estimates, are currently achieving only less than one third of their potential integration levels.
According to the average scores reported at the bottom of Table B2, all geographical regions include subregions with considerable untapped integration potential. On average, the subregions in Europe achieve around 67 percent of their integration potential (with Eastern and Southern Europe featuring the lowest DEA scores). In Asia, average untapped integration potential is around 40 percent (with the lowest score obtained by Central Asia). The subregions of the Americas and Africa are found to achieve 57 percent of their integration potential on average (with the lowest scores for Central America and Northern Africa, respectively). Globally, average regional integration levels across all subregions are found to be at 60 percent of the estimated potential.

It should be noted that the quantitative results should be interpreted with caution, as data availability and quality for the used indicators are limited. Still, the obtained rankings along the CRI Index as well as for individual dimensions of regional integration appear to be plausible in comparison to the findings of other studies in this context. In addition, this analysis shows that the obtained results are generally robust to moderate changes in the aggregation methods underlying the construction of the CRI Index. While the analysis itself focuses exclusively on economic integration and conflict reduction, the findings may also be used as a basis for discussions on further advances in regional integration at the institutional level, or as a starting point for investigations into the deeper reasons behind each subregions performance (both of which go beyond the scope of this study).

Figure B5. Regional Integration Frontier



[1] In addition, some of the included indicators for cross-border infrastructure may also (partially) capture geographic conditions, e.g., by representing de-facto distances between economies in terms of the time and cost for transportation.

[2] While in the past, the private sector was often viewed as merely reacting to institution and market-led processes, an increasing number of studies argue that in many parts of the world, private sector-led multinational initiatives have become an important driving force itself, with the role of governments and international organizations being limited to at most facilitating business initiatives by ensuring appropriate local policy condition (Peng 2002, ASEAN 2004).

[3] Note that the obtained results should be interpreted as lower bounds, since for subregions located on the frontier untapped potential is assumed to be zero by definition, even though there may still be scope for further enhancement in these subregions (there are simply no other subregions in the sample that can serve as benchmarks).

[4] Note that the reported estimates are based exclusively on currently available resources and prevailing conditions, and thus do not allow for interpretations of how close subregions are to their general integration potential if economic or political conditions improve in the future.

Appendix C
Frontier Analyses

Table B2: Data Envelopment Analysis Estimates of Untapped Integration Potential

Subregions	DEA Input Index	Score	Rank
Western Africa	0.405	0.62	5
Northern Africa	0.508	0.17	16
Eastern Africa	0.367	0.64	4
Middle Africa	0.177	1.00	1
Southern Africa	0.629	0.42	12
North America	0.974	0.57	7
Central America	0.486	0.29	14
Caribbean	0.337	0.72	2
South America	0.497	0.69	3
West Asia	0.420	0.55	8
Central Asia	0.557	0.22	15
East Asia	0.536	1.00	1
South Asia	0.390	0.48	11
Southeast Asia	0.411	1.00	1
Pacific & Oceania	0.586	0.38	13
Western Europe	0.952	1.00	1
Northern Europe	0.921	0.61	6
Eastern Europe	0.624	0.51	10
Southern Europe	0.534	0.54	9
Regional Averages:			
Africa	0.42	0.57	
Americas	0.57	0.57	
Asia	0.48	0.60	
Europe	0.76	0.67	
Global Average	0.54	0.60	

Notes: The last two columns report DEA scores and corresponding ranks based on output oriented analysis under variable returns to scale (VRS), estimated via DEAP 2.1 (Coelli 1996; Coelli et al. 2005). Input variable: DEA Input Index; output variable: CRI Index (see Table A.1).

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Appendix E. List of Included Economies and Subregional Groupings

The sample consists of 193 economies, grouped into the following geographical regions and subregions (number of economies in parentheses) as classified by the UN (2017):[1]

Europe (39):

- **Eastern Europe (10):** Belarus, Bulgaria, Czech Republic, Hungary, Moldova, Poland, Romania, Russian Federation, Slovak Republic, Ukraine
- **Northern Europe (10):** Denmark, Estonia, Finland, Iceland, Ireland, Latvia, Lithuania, Norway, Sweden, United Kingdom
- **Southeastern Europe (12):** Albania, Bosnia and Herzegovina, Croatia, Greece, Italy, Republic of North Macedonia, Malta, Montenegro, Portugal, Serbia, Slovenia, Spain
- **Western Europe (7):** Austria, Belgium, France, Germany, Luxembourg, the Netherlands, Switzerland

Americas (37):

- **Caribbean (15):** Antigua and Barbuda, Aruba, the Bahamas, Barbados, Cuba, Dominica, the Dominican Republic, Grenada, Haiti, Jamaica, Puerto Rico, Saint Lucia, Saint Kitts and Nevis, Saint Vincent and the Grenadines, Trinidad and Tobago
- **Central America (8):** Belize, Costa Rica, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama
- **North America (2):** Canada, United States
- **South America (12):** Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Guyana, Paraguay, Peru, Suriname, Uruguay, República Boliviana de Venezuela

Asia (65):

- **Central Asia (6):** Azerbaijan, Kazakhstan, Kyrgyz Republic, Tajikistan, Turkmenistan, Uzbekistan
- **East Asia (8):** China; Hong Kong SAR, China; Macau SAR, China; Democratic People's Republic of Korea; Japan; Mongolia; Republic of Korea; Taiwan, China
- **South Asia (9):** Afghanistan, Bangladesh, Bhutan, India, Islamic Republic of Iran, Maldives, Nepal, Pakistan, Sri Lanka
- **Pacific and Oceania (15):** Australia, Cook Islands, Fiji, Kiribati, Marshall Islands, Federated States of Micronesia, Nauru, New Zealand, Palau, Papua New Guinea, Samoa, Solomon Islands, Tonga, Tuvalu, Vanuatu
- **Southeast Asia (11):** Brunei Darussalam, Cambodia, Indonesia, Lao People's Democratic Republic, Malaysia, Myanmar, the Philippines, Singapore, Thailand, Timor-Leste, Vietnam
- **West Asia (16):** Armenia, Bahrain, Cyprus, Georgia, Iraq, Israel, Jordan, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia, Syria, Turkey, United Arab Emirates, the Republic of Yemen

Africa (52):

- **Eastern Africa (17):** Burundi, Djibouti, Eritrea, Ethiopia, Kenya, Madagascar, Mauritius, Malawi, Mozambique, Rwanda, the Seychelles, Somalia, South Sudan, Tanzania, Uganda, Zambia, Zimbabwe
- **Middle Africa (8):** Angola, Cameroon, Central African Republic, Chad, the Democratic Republic of Congo, Republic of Congo, Equatorial Guinea, Gabon
- **Northern Africa (6):** Algeria, the Arab Republic of Egypt, Libya, Morocco, Sudan, Tunisia
- **Southern Africa (5):** Botswana, Lesotho, Namibia, South Africa, Eswatini
- **Western Africa (16):** Benin, Burkina Faso, Cabo Verde, Côte d'Ivoire, The Gambia, Ghana, Guinea, Guinea Bissau, Liberia, Mali, Mauritania, Niger, Nigeria, Senegal, Sierra Leone, Togo

Handling of missing data

The analysis is affected by two types of data unavailability: missing values for individual economy-pair observations and complete absence of some economies in the original datasets. To address the first issue, we augment the data with information from the previous year (i.e., we impute missings with the corresponding value from the previous year if available) for those variables that are most affected (i.e., those for I.b, II.a, II.b, and III.a). Besides this procedure, no additional imputations for single missing values are performed.

Regarding absent economies, none of the included variables provide information on all 193 economies included in the analysis. However, in most cases coverage is well above 95 percent. The only variables that cover less than 95 percent of economies are those for indicators II.a, II.b,, III.a, V.a and V.b of the CRI Index (i.e, FDI positions and the two indicators for financial integration and peace and security, respectively), as well as the Logistics Performance Index, which is used as input variable in the DEA.

For indicator III.a, data on bilateral FDI positions from the IMF's Coordinated Direct Investment Survey (CDIS) are only available for 115 economies (around 60 percent). To increase coverage, we use data from UNCTAD's Bilateral FDI Statistics 2014 to add information for those countries missing in the CDIS. This leads to a total of 192 economies represented in the respective indicator for FDI. Similarly, we use data from the UN's Commodity Trade Statistics Database (COMTRADE) to impute the intraregional share of intermediate goods exports (III.b) for Southern Africa, the only subregion that is not sufficiently covered in the WITS dataset.

For indicators II.a and II.b, data are only available for 75 and 76 economies, respectively (around 40 percent). Coverage is particularly low for the Caribbean, Pacific & Oceania, and the subregions in Africa, where in some cases data are only available for a single economy within a subregion. For Western and Middle Africa, no data at all are available. As we were unable to identify an alternative data source, we impute the missing values for these two subregions by using the respective mean values across the other three African subregions. While this approach certainly provides only a very rough approximation, we believe it likely helps to reduce the potential bias that might otherwise occur if the CRI Index was computed without the dimension of financial integration for these two regions. When we compute the CRI Index without the financial integration dimension at all, the resulting ranks of the two affected subregions change only marginally. This suggests that the imputed values are not driving the overall results for these regions.

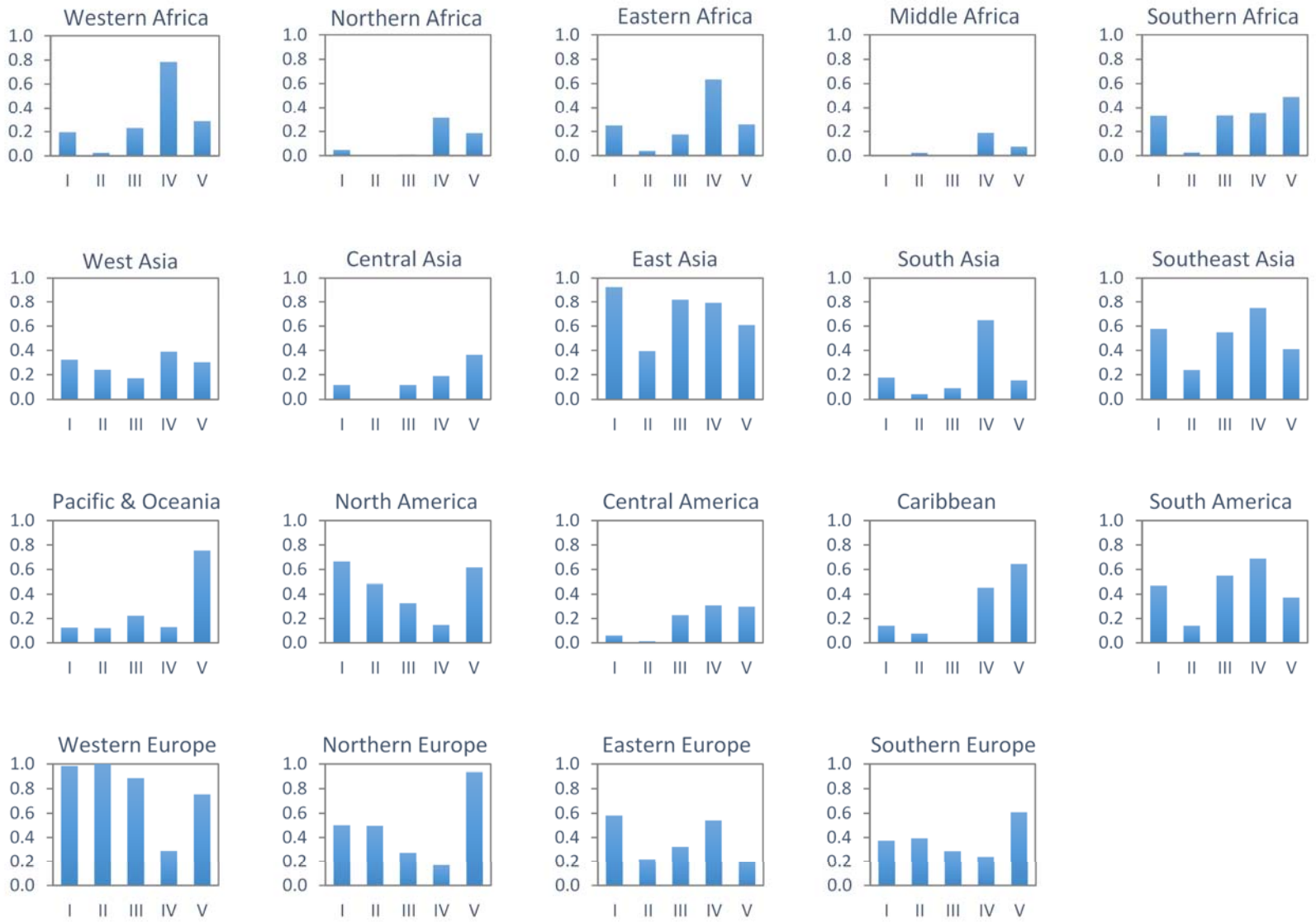
For the two indicators of dimension V., data are only available for 136 economies (70 percent), as most of the European economies are not included in the Global Conflict Risk Index. For the Logistics Performance Index, data are available for 165 economies (85 percent). As all the subregions are covered, we abstain from additional imputations for these three indicators and simply compute the respective values based on the subsets of economies available for each subregion.

[1] The only exception is Azerbaijan, which we include in Central Asia to be more in line with World Bank classifications.

Subregions	Ultimate Regional Integration Outcomes						Enabling Environment			
	CRI Index	Trade Integration	Financial Integration	Investment and Production Networks	Movement of People	Peace and Security	*DEA Input Index*	Trade Openness	Cross-border Infrastructure	Business Regulation Environment
	(1)	(2)	(3)	(4)	(5)		(6)	(7)	(8)	(9)
Western Africa	0.31	0.20	0.02	0.23	**0.78**	0.29	0.41	**0.88**	0.10	0.23
Northern Africa	0.11	0.05	0.01	0.01	0.31	0.19	0.51	**1.00**	0.23	0.29
Eastern Africa	0.27	0.25	0.04	0.17	0.63	0.26	0.37	0.68	0.17	0.25
Middle Africa	0.06	0.01	0.02	0.00	0.19	0.08	0.18	0.53	0.00	0.00
Southern Africa	0.31	0.33	0.03	0.33	0.35	0.49	0.63	**1.00**	0.36	0.53
North America	0.45	0.66	0.48	0.33	0.15	0.62	**0.97**	**1.00**	**0.92**	**1.00**
Central America	0.18	0.06	0.01	0.23	0.31	0.30	0.49	0.63	0.28	0.55
Caribbean	0.26	0.14	0.08	0.00	0.45	0.64	0.34	0.50	0.08	0.43
South America	0.44	0.47	0.14	0.55	0.69	0.37	0.50	**0.78**	0.29	0.42
West Asia	0.29	0.32	0.24	0.17	0.39	0.30	0.42	0.35	0.37	0.53
Central Asia	0.16	0.12	0.00	0.12	0.19	0.36	0.56	**1.00**	0.06	0.61
East Asia	0.71	**0.93**	0.39	**0.82**	**0.79**	0.61	0.54	0.00	0.73	**0.87**
South Asia	0.22	0.18	0.04	0.09	0.65	0.15	0.39	0.64	0.22	0.32
Southeast Asia	0.50	0.58	0.24	0.55	**0.75**	0.41	0.41	0.30	0.41	0.53
Pacific & Oceania	0.27	0.13	0.12	0.22	0.13	**0.75**	0.59	**0.88**	0.35	0.52
Western Europe	**0.78**	**0.98**	**1.00**	**0.89**	0.29	**0.75**	**0.95**	**1.00**	**1.00**	**0.86**
Northern Europe	0.47	0.50	0.50	0.27	0.17	**0.94**	**0.92**	**0.97**	**0.80**	**1.00**
Eastern Europe	0.37	0.58	0.22	0.32	0.54	0.20	0.62	0.65	0.41	**0.81**
Southern Europe	0.38	0.37	0.39	0.29	0.24	0.61	0.53	0.40	0.42	**0.78**
Regional Averages:										
Africa	0.21	0.17	0.02	0.15	0.45	0.26	0.42	**0.82**	0.17	0.26
Americas	0.33	0.33	0.18	0.28	0.40	0.48	0.57	0.73	0.40	0.60
Asia	0.36	0.37	0.17	0.33	0.48	0.43	0.48	0.53	0.36	0.56
Europe	0.50	0.61	0.53	0.44	0.31	0.62	**0.76**	**0.76**	0.66	**0.86**
Global Average	0.34	0.36	0.21	0.29	0.42	0.44	0.54	0.69	0.38	0.55

CRI=composite regional integration, DEA=data envelopment analysis.
Notes: Values above 0.75 are marked in bold.

Figure B.6. Global CRI Index: Dimensions by Subregions



I = Trade Integration, II = Financial Integration, III = Investment and Production Networks, IV = Movement of People, V = Peace and Security

Robustness checks

As described above, the construction of the CRI Index involves a number of decisions about the applied aggregation methodology, which may affect the obtained results in Section II and Section III. To assess the robustness of the CRI Index to different specifications, this section explores the resulting values and rankings of the CRI Index for different weighting schemes, including principal component analysis (PCA).

In Table B3, four different weighting schemes are applied, each scheme assigning double weight to one dimension. For example, in the column for dimension I., the indicator for trade integration is assigned a weight of 2/6, while the indicators for the remaining four dimensions are each assigned a weight of 1/6.

The two columns thereafter report the resulting values and ranking when the CRI index is constructed based on principal component analysis (the corresponding eigenvalues and scoring coefficients are reported in Table B3). The last two columns in Table B4 show the results when the CRI index is constructed without dimension V.

In addition to the standard Pearson correlation coefficient for continuous variables, we also calculate Spearman correlation coefficients which measure the similarity between discrete rankings. The Spearman correlation coefficient equals 1 if both rankings are identical, and values smaller than 1 indicate less agreement (a value of 0 indicates that the rankings are completely independent).

The results in Table B4 suggest that the conclusions presented in the main part of this paper are not generally driven by the applied weighting scheme in the construction of the CRI Index. For most subregions, the respective ranks show only very small changes across the considered alternative weighting schemes. Both the Pearson correlation coefficient for continuous values and the Spearman correlation coefficient for the rankings are most of the time very close to one and always significant at the 1% significance level. This indicates that the baseline CRI Index is robust against moderate changes in the underlying weighting scheme, which suggests that the results in Section II and Section III are unlikely to be driven by the applied aggregation methodology.

Table B3. Principal Component Analysis

	I. Trade Integration	**II. Financial Integration**	**III. Investment and Prod. Networks**	**IV. Movement of People**	**V. Peace and Security**
Eigenvalues	3.042	1.392	0.369	0 .138	0 .059
Proportion	0.608	0.278	0.074	0.028	0.012
Cumulative Proportion	0.608	0.887	0.961	0.988	1.000
Scoring Coefficients:					
Component 1	0.543	0.528	0.514	0.027	0.402

Component 2	0.193	-0.180	0.283	0.810	-0.440
Component 3	-0.192	-0.380	-0.056	0.416	0.801
Component 4	0.137	0.535	-0.746	0.370	0.043
Component 5	-0.783	0.508	0.310	0.181	-0.019

Table B4. Robustness to Different Weighting Schemes and Principal Component Analysis

Subregions	Base-line[a]	Rank	Weights doubled for individual dimensions:										PCA[b]	Rank
			I.	Rank	II.	Rank	III.	Rank	IV.	Rank	V.	Rank		
Western Africa	0.31	10	0.29	11	0.26	11	0.29	10	0.39	8	0.30	12	-1.03	13
Northern Africa	0.11	18	0.10	18	0.10	18	0.10	18	0.15	18	0.12	18	-2.03	18
Eastern Africa	0.27	13	0.27	12	0.23	14	0.25	13	0.33	10	0.27	14	-1.09	14
Middle Africa	0.06	19	0.05	19	0.05	19	0.05	19	0.08	19	0.06	19	-2.30	19
Southern Africa	0.31	9	0.31	9	0.26	10	0.31	9	0.31	11	0.34	10	-0.28	10
North America	0.45	5	0.48	4	0.45	5	0.43	6	0.40	7	0.47	5	1.48	4
Central America	0.18	16	0.16	16	0.15	16	0.19	16	0.20	16	0.20	16	-1.36	15
Caribbean	0.26	14	0.24	14	0.23	13	0.22	14	0.29	13	0.33	11	-0.94	12
South America	0.44	6	0.45	6	0.39	6	0.46	4	0.48	4	0.43	6	0.51	7
West Asia	0.29	11	0.29	10	0.28	9	0.27	11	0.30	12	0.29	13	-0.49	11
Central Asia	0.16	17	0.15	17	0.13	17	0.15	17	0.16	17	0.19	17	-1.42	16
East Asia	0.71	2	0.74	2	0.65	2	0.72	2	0.72	1	0.69	2	2.86	2
South Asia	0.22	15	0.21	15	0.19	15	0.20	15	0.29	14	0.21	15	-1.57	17
Southeast Asia	0.50	3	0.52	3	0.46	4	0.51	3	0.55	3	0.49	4	0.99	5
Pacific & Oceania	0.27	12	0.25	13	0.25	12	0.26	12	0.25	15	0.35	8	-0.27	9
Western Europe	0.78	1	0.82	1	0.82	1	0.80	1	0.70	2	0.78	1	4.56	1
Northern Europe	0.47	4	0.48	5	0.48	3	0.44	5	0.42	5	0.55	3	1.63	3
Eastern Europe	0.37	8	0.41	7	0.35	8	0.36	8	0.40	6	0.34	9	0.10	8
Southern Europe	0.38	7	0.38	8	0.38	7	0.36	7	0.36	9	0.42	7	0.66	6
Pearson corr.	1.00	-	1.00	-	0.99	-	1.00	-	0.98	-	0.99	-	0.97	-
Spearman corr.[c]	-	1.00	-	0.99	-	0.99	-	0.99	-	0.96	-	0.97	-	0.97

Notes: [a] Simple average, i.e., equal weights assigned to each dimension (as in Table A.1, column 1). [b] Principal component analysis. [c] The Spearman correlation coefficient ranges inside the interval [−1,1] and takes the value 1 if the agreement between two rankings is perfect (i.e. the two rankings are identical), the value 0 if the rankings are completely independent, and the value -1 if one ranking is the reverse of the other.