

DFIs investment and job creation in Low Income Countries

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Questions

What is the impact of development finance institution (DFI) investments on generating quality jobs and raising incomes (particularly for poor people) in LICs?

What are the wider impacts of DFI investments on poor people, particularly on their access to infrastructure, goods and services (e.g. access to energy, transportation / roads, financial services)?

DFID's requested for the literature review to focus on methodologies used to report on DFIs' impacts and how rigorous these are.

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1. Overview

Development financial institutions (DFIs) operations across their countries portfolio directly generate or support employment in the projects and companies supported by them. The extent of this impact on jobs is mixed and varies significantly across DFIs. This is mainly due to the different investment and financing instruments applied in support of SMEs (which themselves varies across countries) and infrastructure projects (energy projects and differ significantly from transport and water and ICT projects) and other interventions (e.g. compliance with labour, social and environmental standards). Understanding the differences between DFIs, their mandates and roles is fundamental to understand their developmental impacts.

Rigorous evidence of development impacts, especially on job creation, poverty reduction, income and access to services is very scarce for individual DFI. Only few DFIs commissioned in depth studies to assess their impacts. The majority of DFIs rely on their own reporting capabilities to generate results and reporting them in their annual reports and ex-post evaluations. The latter normally follow the five OECD DAC evaluation criteria assessed through scoring, which do not normally include in depth assessment of results.

The major obstacle to accurate impacts on jobs and other indicators is the methodologies used by the DFIs which normally is based on data at individual investment levels collected from ex-ante evaluation or appraisals. This data can be inaccurate and usually biased towards larger impacts than in reality.

To attribute impacts to a DFIs, the principles of additionality needs to adhere to, i.e. the investment or financing would not have gone ahead without the DFIs (preventing any crowding out of private sector financiers and investors). There are two aspects of additionality: financial additionality, just explained, and additionality in value of the investment or projects where the investment by the DFIs is additional because it bring with it compliance to social and environment standards that increase the value of the investment/ project and business.

In the development literature there are three ways of measuring employment impacts:

1. Based on data from individual investment: where DFIs compile data from individual investment. This is most common way of reporting on employment impact by DFIs. Data from individual investment can be interrogated further by the development of a causal chain linking inputs (investment) to outputs and outcomes, and eventually impacts. Few DFIs have commissioned such studies and have proven to provide more critical assessments of what a DFI has in fact achieved. In terms of access to services, DFIs report on number of SMEs supported with access to finance and similarly if they support Micro Finance Institutions, they provide number of clients served with financial products. The literature reviewed does not seem to disaggregate these results by income groups or gender. In terms of access to infrastructure services DFIs estimated the number of people benefitting from power generation from renewable energy investment –these results also do not seem to have been disaggregated by income groups or gender.
2. At sector level: the advantage of an in depth analysis of the potential for employment creation in a particular sector based on investment needs can lead to superior analytical results establishing relationship between level of investment needed and corresponding employment creation (direct, indirect and induced). Once such sector analyses are done, it would be relatively easy to calculate an accurate contribution to employment by DFI that is investing in that sector. There is very little or no literature on these kind of analysis for LICs.
3. At macro level: through social accounting matrix and input and output modelling, it is possible to arrive at fairly accurate employment impacts from aggregate DFID investment in the whole economy (or group of economies). CDC is pioneering this approach.

2. DFIs mandates and roles

Development financial institutions (DFIs) are financial institutions (mainly banks) that make finances – at market or concessional rates - available for specific development impacts to the public sector, parastatals or to the private sector. The shareholding of DFIs are mainly national governments from their own countries – e.g. KfW Development Bank is owned by the Federal Government of Germany, CDC is the DFI wholly owned by the UK Department for International Development; FMO a Dutch DFI is wholly owned by the Dutch government; Norfund is the DFI of the Norwegian government and the European Investment Bank (EIB) is the development bank of the European Union.¹

There are also several multilateral DFIs working at a regional level, such as AfDB (African Development Bank) ADB (Asian Development Bank) EBRD (European Bank for Reconstruction and Development) and recently new development banks have been set up to respond to regional infrastructure needs (e.g. the Asia Infrastructure Investment Bank) and needs to coalition of countries like the New Development Bank (NDB) of the BRICS countries. The DFIs mandates are defined by their national governments e.g. KfW development bank (from now on called only KfW) assist the German Ministry of Economic Cooperation and Development (BMZ) to achieve the goals with respects to German's development policy².

DFIs investment usually has to adhere with the principle of additionality, i.e. preventing the displacement of domestic sources of financing both public and private but DFIs need to finance interventions that would not otherwise be financed. Norfund has a more elaborate definition of additionality, distinguishing between financial additionality and additionality in value:

“An investment by a development finance institution (DFI) is said to be financially additional if it is provided to an entity in a quantity, or on terms, or for developmental purposes that the private sector cannot otherwise provide. An investment is also said to be additional in value if a DFI offers non-financial value that the private sector is unable to offer, and if this leads to better development outcomes. This may occur through, for example, the provision of knowledge and expertise, the promotion of social or environmental standards, or the fostering of good corporate governance.” (p. 17).³ Through the concept of additionality DFIs would normally provide finances in imperfect capital markets, frontier markets and generally in countries where the financial sector has failed to address the needs for the private sector.

This fundamental concept also affects the results produced by the DFIs investment – the results needs to be additional to what would otherwise have bene without the DFIs investment. This principle has also been the driving principles of the various EU blending platforms⁴: e.g. the EU-Africa Trust Fund, the Africa Investment facility (AfIF; now to be renamed Africa Investment Platform), and the Neighbourhood Investment Facility (NIF to be renamed as The Neighbourhood Investment Platform).

¹ Under the European DFI (EDFI) association there are 15 DFIs within the European Union and EFTA: a part from the ones list in the text, there are: Bio and SBI for Belgium; COFIDES from Spain (Spain has also another DFI that fund public sector projects called: Agencia Española de Cooperación Internacional para el Desarrollo – AECID); KfW DEG for private sector investment by Germany; FinnFund for Finland; IFU for Denmark; OeEB for Austria; PROPARCO (and AFD) for France; Sifem for Switzerland; SIMEST (of CDP) for Italy; Sofid for Portugal; and Swedfund for Sweden. OPIC (Overseas Private Investment Corporation) of the USA.

² Overview of KfW Development Bank: Facts and figures. https://www.kfw-entwicklungsbank.de/PDF/.../PDF.../2016_Selbstdarstellung_EN.pdf

³ Norfund, (2016), *Investing for Development Report*.

⁴ <https://europa.eu/capacity4dev/t-and-m-series/document/guidelines-eu-blending-operations>

Similar to the EU funded blending platforms is the work of the Private Infrastructure Development Group (PIDG) – using grants from major donors, including DFID, to mobilise private sector investment in infrastructure as vital element in boosting economic growth. Although not a DFI per se, the PIDG and its facilities work closely with most DFIs in Low Income Countries (LICs) to assist, through concessional financing instruments, private sector developers' and financiers' investment in energy, transport, water and ICT. Additionality is fundamental for the work of the PIDG facilities which only intervene when everything else (e.g. commercial lending operations) has failed.

As mentioned by Massa, Mendez-Parra and te Velde (2016)⁵ DFIs have been placed at the forefront of the development finance in Low- and Lower-middle income countries at the 2015 International Conference at Addis Ababa on Finance for Development⁶ and to support climate finance under the 2015 Paris Agreement⁷ to the tune of US\$100 billion. This more *explicit* role for DFIs has encouraged them to improve of how they report on development results achieved. Because DFIs use public funding from national government and support the implementation of developing policies, Massa et al. (2016) argue that “what the general public should be interested in: to what extent do DFIs create jobs, raise growth, increase use of renewable energy and crowd in local private sector investment?”

Before looking at how DFIs measures their results and whether they have made progress in assessing their impacts, it is important to understand how they invest their funds, and in which sector. This helps painting a picture of what results they need to report, the complexity of reprint across several sectors and financial instruments, and the type of assessment, evaluation and verification of impacts they have used.

As mentioned before there are DFIs that can invest in public sector institutions and projects as well as private sector projects or in services to address private sector needs (e.g. KfW, AFD, EIB, AfDB, ADB) other exclusively in private sector (e.g. all of the members of the EDFIs). DFIs normally support the financing in similar areas:

- Infrastructure (economic and social): physical infrastructure projects and services associated with infrastructure (e.g. transportation, power management)
- Assistance to financial services especially to boost SMEs access to finance across a variety of economic sectors.
- Climate finance especially making financing available and accessible for renewable energy and energy efficiency projects and as well as SMEs operating in this space.

DFIs have a variety of financial instruments to use to support the public and private sector. The financial instruments can be augmented by the DFIs access to loan-grant blending facilities as mentioned above. The main instruments are:

- Debt: with a level of concessionality that depends on the use of the loans, of the rating of the DFIs (most of them enjoy a triple A credit rating) and on access to grant from their parent Ministry. DFIs/ Development Banks such as KfW, AFD, EIB, AfDB, ADB and most of the EDFIs members provide debt financing. For example KfW uses pure non-repayable financial contributions, loans from budget funds (standard loans), loans financed by KfW with interest subsidised by grants from the German Federal

⁵ Massa, I., Mendez-Parra, M. and te Velde, D. W., (2016 December), The macroeconomic effects of development finance institutions in sub-Saharan Africa, Report, ODI.
<https://www.odi.org/sites/odi.org.uk/files/resource-documents/11182.pdf>

⁶ http://www.un.org/esa/ffd/wp-content/uploads/2015/08/AAAA_Outcome.pdf

⁷ <https://unfccc.int/resource/docs/2015/cop21/eng/l09r01.pdf>

Government (development loans), loans financed by KfW at near- market conditions (promotional loans) and equity participations.

AFD, the French development agency and a DFI when supporting public sector financing for projects at national levels for poor countries because of the triple A rating, can provide concessional loans at very low interest rates and with a maximum of 25 year tenor (for some instrument AFD can extend the tenor to 30 years).

- Equity and quasi-equity: most of DFIs providing finances to the private sector specialise in equity and quasi equity.

In particular cases DFIs can mobilise funds for the provision of technical assistance especially for business development services and for infrastructure development – especially project preparation activities.

3. How do DFIs report on job creation and overall impacts

DFIs reporting requirements is mainly based on the nature of their operation and instruments, and on the target sectors. Because DFIs are primarily financial institutions it matters how much of the finances are committed to projects and to supporting SMEs. The total commitment is usually broken down not just per industry or sectors but also where the loans have been approved and is disbursed for climate change related activities and projects, and some cases like for FMO, total commitment is broken down to show how much finances have gone to address gender inequality⁸.

Beyond the financial commitments (by financial instruments), DFIs reports on various **impacts**: impact on employment creation or support, impact on assistance to businesses and micro finance institutions (usually to do with access to finance and business services), climate change related investment (usually clean energy generation and CO₂ savings) and other categories: e.g. payment of local taxes by supported businesses.

As reported by Savoy, Carter, and Lemma (2016, p.17), European DFIs reported the following contribution to development impacts in 2015:

Jobs supported	More than 4 million (in companies supported by the DFIs)
Electricity Generated	74 TWh
Local tax paid	EUR11bn

Each DFI reports on its development impacts and the following is a selection of DFIs with comprehensive reports on development impact performance⁹. For each DFI, four impact indicators were reported: employment creation: measured as in new job created or number of job supported; MFIs/SMEs development and financing: measured as financial commitment to financial sector to provide access to finance to SMEs and provide credit lines to Micro Finance Institutions which in turns would issues loans to clients; climate change indicators: measured as in clean energy generation, and number of people benefitting from electricity access. As not all DFIs have the same impact indicators there are categories of impacts that will be defined for each DFI.

⁸ FMO 2017 Annual report. <https://www.fmo.nl/nl/library/download/urn:uuid:338b0222-e922-40d2-a00c-87346d2b8b26/2017+fmo+annual+report.pdf>

⁹ FMO: 2017 Annual Report; DEG's Contributions to the Global Goals for Sustainable Development, 2016; Norfund Investing for Development Report, 2016; CDC: 2016 Annual Review; Swedfund: 2016 Integrated Report (Part 2); FinnFund 2016 Annual Report; PROPARCO 2016 Annual Report; IFU 2017 Annual report; IFC: 2017 Annual Report; OPIC: 2016 Annual Report.

FMO (Dutch DFI):

In 2017 FMO reported 900,000 jobs supported through its investments over a 2012 baseline of 500,000. It also reported a 1.6 million tonnes of CO₂ avoided and more than 40 investment where it contributed to reducing gender inequality.

DEG (German DFI):

In 2016 (in the latest report available), DEG reported that 800,000 people worked in companies that received finances from DEG. It also reported that it supported companies that safeguarded 1.3 million jobs indirectly. Financial institutions supported by DEG facilitated access to finance for 1.3 million SMEs. The energy suppliers directly co-financed by DEG produced 17 TWh of power from renewable sources. A total of more than 6 million tonnes of CO₂ were avoided in 2016; and companies financed by DEG paid an annual total of around EUR 1.7 billion in wages and salaries.

Government revenues from taxes, concessions, licences and dividends derived from companies and infrastructure investments financed with DEG, amounted to more than EUR 1.5 billion.

Norfund (Norway's DFI):

In 2015 (the latest report available), Norfund reported that 382,000 people were employed in companies in which Norfund had invested and 34% of those employed were women. From 2014 to 2015, the number of jobs in the companies in which Norfund has invested rose by 9%. In that year agribusiness companies supported by Norfund cultivated 45,000 ha of land, and produced 125,000 tonnes of food. With regards to access to finance: Norfund invested NOK 4,300 million (around GBP 400 million) in financial institutions and NOK 1,800 million (GBP 165 million) in funds. The financial institutions supported by Norfund had 36.5 million active loan clients and Norfund's SME-funds had invested in 660 SMEs. The energy companies in Norfund's portfolio produced a total of 18.5 TWh of electricity of which 63% were from renewable sources; 7.4 million tonnes of CO₂ was avoided.

CDC (UK DFI):

In 2016, CDC supported 1,245 businesses which managed to create 44,000 new direct jobs (gender disaggregated: 70% were men, 30% were women). Those businesses contributed to the creation of 1.24 million new indirect jobs. CDC supported investment in 69,310 GWh of power generation. CDC investee companies paid USD 4.1 billion in local taxes.

Swedfund (Sweden's DFI):

In 2015 (latest available report), 111,791 jobs were created and job growth in 27 companies in the Swedfund's portfolio averaged 2.7% (from 2014 to 2015). In clean energy, Swedfund's investment produced GWh 2,635 of power. Swedfund also tracks gender: 19% of work force were women and 72 women on Boards of Directors were employed in the companies supported by Swedfund. Local taxes paid by businesses and projects supported by Swedfund amounted to SEK 851 million (GBP 71 million) in Africa alone.

PROPARCO (French DFI):

In 2016, PROPARCO directly created or maintained 142,000 at PROPARCO-financed banks, businesses and infrastructure operators; 732,000 indirect jobs were created or maintained; and 47% of the workforce at PROPARCO-financed banks, businesses, infrastructure operators and investment funds accounted for by women. PROPARCO estimated that 13.4 million people were provided with potential access to electric power sources. Its investment in clean energy resulted in 680,500 tonnes of CO₂ avoided. In 2016, 898 MW of power capacity were installed or about to be installed, including 802 GWh from renewable energy sources. In terms of access to basic services in 2016, 2 million more people were microcredit beneficiaries, with loans totalling EUR 192 million. Also, PROPARCO investment resulted in 1,700 additional beds in hospitals.

FinnFund (Finland's DFI):

In 2015 (the latest available reporting year) FinnFund reports that it supported 25,603 employed people of which 9,137 were women. Its projects paid local taxes for EUR 284.7 million and it delivered power to power utilities for 447GWh. FinnFund projects also assisted 15,812 farmers and its finances to MFIs made loans available to 3.4 million people.

IFU (Denmark's DFI):

In 2017 IFU expected direct employment to be created or preserved in projects receiving IFU finances to be 5,117 people. Its investment in power generation is expected to produce 548GWh of power from 345MW of installed capacity. The clean power generation will avoid 9.4 million tonnes of CO₂ for the lifetime of the projects. IFU projects paid local taxes for DKK2.8 billion (GBP330 million). Its investments with MFIs made available 37,000 loans of which 90% were women clients.

IFC (Multilateral IFI):

In 2017 the IFC reports that its investments provided jobs to 2.4 million people, it provided more than 79 million people with power and it distributed water to 14 million people. Only in Sub-Saharan Africa IFC investments paid in local taxes USD 1.6 billion.

OPIC (Overseas Private Investment Corporation – USA)¹⁰:

In 2016, new projects OPIC committed to are projected to support more than 10,000 local jobs, generating USD 117.5 million in developing country revenue, and leading to USD 7.45 billion of locally-procured goods and services. With regards to support to SMEs (mainly through capacity building), OPIC's Expanding Horizons workshop series for small businesses and entrepreneurs reached more than 4,000 small businesses since it was launched in 2006. In 2016, OPIC supported 13 energy projects in seven countries that were projected to generate 919 MW of power.

Measuring impact at portfolio/ project / business level

A number of DFIs have engaged in more rigorous results measuring framework and approaches to strengthen the robustness of their performance assessment against those indicators explained in the previous section. For example the EIB has employed a Results Measurement (ReM) Framework¹¹ to show how EIB inputs (e.g. loan, technical advice), generate outputs (e.g. an electricity transmission line, a training programme), which enable outcomes (e.g. improved access to energy, improved institutional capacity) and, over time, lead to impacts. This is similar to a Value for Money framework and assessment used by DFID.

The EIB's logical framework approach is reflected in the ReM framework's 3 Pillar structure:

Pillar 1: Assesses consistency with EIB mandate objectives as well as contribution to EU priorities and country development objectives.

Pillar 2: Assesses results and the ability of the promoters to achieve these based on the soundness of the operation and the operating environment.

¹⁰ The 2017 OPIC Annual Report does not report on job creation any longer.

¹¹ EIB (2017 September), The Results Measurement (ReM) framework methodology.

Pillar 3: Assesses the EIB contribution beyond what local markets can offer in terms of (i) financial contribution; (ii) technical advice; and (iii) facilitation.

According to the EIB, through this new framework, the DFI is expected to report of the following development results: EIB's credit lines to financial institutions will sustain 37,492 jobs in small businesses; guarantee instruments will sustain 12,900 jobs; investment in water projects will connect 218,000 households to clean water and bring sewage treatment to 1 million. Electricity projects will see 6,300 km of new, modern transmission lines installed and connect 434,000 new households to power. EIB's supported microfinance institutions will sustain 92,000 jobs throughout their lifecycle.

Also DEG has recently developed a new and improved way to monitoring results and impacts. It has introduced a multidimensional index-based development assessment: the Development Effectiveness Rating (DERa). The DERa is based on a theory of change approach, a methodology used to explain the process towards desired change by mapping causal linkages from initial activities of DEG's clients through their outputs towards one or multiple targeted outcomes and finally impacts.

DEG applies the DERa throughout the project cycle of each transaction. Prior to approval: the information will serve as the baseline; DERa will also provide a forecast of expected effects with the investment on a 5-year horizon; and after commitment, the DERa is updated yearly with actual values. This allows to analyse changes in DEG clients' contribution to development since DEGs investment. These are just two examples of what some DFIs have started to work on to strengthen their reporting against developmental impact. Having said that, DFIs would normally report for each set of indicators and targets from data from projects and business supported aggregated at portfolio level. The aggregation is done across sectors and countries where DFIs allocate their finances. The results achieved per indicator, e.g. job creation or job supported, are not related to the overall impact in a country, i.e. they do not show the real impact a DFID investment had to reduce unemployment in a particular country. This is because the impact on job creation or jobs supported by country, especially in Low Income Countries where unemployment runs in the double figure, of a DFI portfolio investments over a year, would be marginal at best.

With regard to job creation as an impact, it is worth mentioning that a DFI investment is often targeted at innovative capital intensive solutions where risks are perceived to be high and therefore keeping local financial institutions away from those investments¹². These innovations do not often have significant direct impact on new jobs¹³ but they might have sizeable impact on indirect, induced jobs as well as job created through the multiplier effect of investment. Capturing indirect and induced jobs are more costly and they tend to be included only as estimates in ex-ante impact assessments (for example in infrastructure projects, estimates of induced job creation are included in the cost and benefits analysis in pre-feasibility and feasibility studies) but the accuracy of such estimates would generally be quite low.

DFIs have also conducted ex-post evaluations of their portfolio, but these evaluations have not been robust impact evaluations that have used randomised controlled trials methodologies or other rigorous methods, instead they would normally use the five OECD DAC evaluation

¹² This is also called the catalytic effect of DFIs, where DFIs pave the way for other financiers to come on board once the risk perception decrease (EDFI, investing to create jobs, boost growth and fight poverty, Flagship Report 2016)

¹³ This is particular the case for infrastructure projects, especially renewable energy. While labour intensive infrastructure work, like maintenance of secondary or rural roads, are normally funded by the national budget or international donors as they do not the necessary returns to attract DFIs financing.

criteria¹⁴: Relevance (are they doing the right thing?), Effectiveness (are the objectives of the development interventions being achieved?), Efficiency (are the objectives being achieved economically by the development intervention?), Impact (the positive and negative changes produced by a development intervention, directly or indirectly, intended or unintended), and Sustainability (are the positive effects or impacts sustainable?). Although evaluating the impact should be done through proper evaluation methodologies most of the time it has been done through (subjective) scoring (example from KfW's 14th Evaluation Report, 2015-2016).

However, there are exceptions: for example Spratt, O'Flynn and Flynn (2018) evaluation of the Swedfund¹⁵ used a theory of change based evaluation and "based on a causal chain that captures how Swedfund's investments might lead (through company growth, employment and taxation) to an impact on poverty" (p.44). The evaluation was conducted in three steps: first, impact was assessed on an ex-ante basis in terms of asset allocation. Second, the evaluation presented ex post findings of development impacts based upon the data provided by Swedfund. Lastly the evaluators identified particularly interesting findings and went back to Swedfund for an explanation of the context surrounding these investments, and their understanding of the result, i.e. why some results happened and how they could be attributable to the Swedfund. The outcome of the evaluation explored the data available and the reasons for certain "changes" triggered by Swedfund especially on poverty reduction. The main conclusions were that: Swedfund had some positive poverty reduction impact, and it also positively influenced the Environmental Social and Governance performance of some of the firms in which it invested. But "for employment and tax, the evaluation could not discern any clear impact" (p. 109).

Another example of more rigorous evaluation of development impact is by the EIB in its evaluation of employment impact of EIB infrastructure investments in the Mediterranean partner countries (2015)¹⁶. The study was divided into two parts: 1) a detailed analysis of a selected number of representative projects to assess the number of direct jobs created, as well as the quality of employment generated; and 2) simulations using macro-economic models to assess the indirect and induced job creation. The analysis generated a large number of findings and recommendations. Of interests were: the actual number of job created were lower than expected based on the ex-ante assessment per infrastructure project; and roads projects had the higher employment creation effect. In all infrastructure projects there was a higher demand for skilled labour as opposed to unskilled labour and maintenance work had the higher potential for job creation. Although these are only few of the findings, the analysis showed that it is possible and useful to unpack and elaborate on the number of job created, why they are created in certain sectors and activities, the productivity of job created etc. The study's first recommendation was for EIB to improve on the monitoring of employment creation of infrastructure projects it financed.

With respect to access to services: financial and infrastructure, DFIs do report on access to finance especially for SMEs (e.g. Norfund) and if they finance Micro Finance Institutions (MFIs) they tend to mention the number of MFI clients benefitting from the financial services (e.g. loans). DFIs also estimate how many people would benefit from the power generation (from renewable energy investments) they have supported, although these estimates do not disaggregate by income groups or gender.

¹⁴ Norad, Evaluation of the Norwegian Investment: Fund for Developing Countries (Norfund), Report 1/2015; KfW, Living in a threatened world – Effectively responding to hazards, 14th Evaluation Report, 2015-2016; KfW, Ex-post evaluation of Investment Climate Facility for Africa, 2015; ex-ante evaluation by DANIDA, The Ministry of Foreign Affairs' Strategy for The Investment Fund for Developing Countries (IFU), 2017-2021.

¹⁵ Spratt, S., P. O'Flynn and J. Flynn (2018), *DFIs and Development Impact: an evaluation of Swedfund*, EBA report 2018:01, Expert Group for Aid Studies, Sweden

¹⁶ EIB and ILO, (2015 June) *Employment impact of EIB infrastructure investments in the Mediterranean Partner Countries*, Summary report.

Measuring impact at sector level

There does not seem to be example of impact assessments or evaluation (ex-ante or ex-post) of DFIs investment at sector level in Low Income Countries (LICs). But there are important ex-ante studies of the potential for employment creation and economic growth at sector level which present the potential employment impact of a unit of investment in the sector, e.g. per USD 1 million. One such study conducted with a rigorous methodology was the Pollin, Heintz and Garrett-Peltier. (2009)¹⁷ study on the economic benefits of investing in clean energy in the United States. The analysis suggested that: two federal policies operating together could generate roughly USD 150 billion per year (government funding and private sector investment) in new clean-energy investments in the United States over the next decade. The study estimated that this level of investment could generate a net increase of about 1.7 million job and these job gains would be enough to reduce the unemployment rate by about one full percentage point.

The authors used advanced economic modelling – and for the employment creation effect they used an input-output model. The input-output model allows to observe relationships between different industries in the production of goods and services. Specifically the input-output modelling approach enables to estimate the effects on employment resulting from an increase in final demand for the products of a given industry. For example, it can estimate the number of jobs directly created in the construction industry for each USD 1 million of spending on construction, and allow to estimate the jobs that are indirectly created in other industries through the USD 1 million in spending on construction. Overall, the input-output model allows to estimate the economy-wide employment results from a given level of spending.

If such analysis existed per sector for particular LICs or regional grouping of LICs it would be relatively easy to measure the employment impact that a DFI investment in a sector could have. These estimates would provide a higher degree of confidence than employment impacts on a project by project, investment by investment basis.

Measuring impact at macro level

In February 2017, CDC published its new approach to measure total employment effects from a portfolio of investment (from a number of DFIs, not just CDC)¹⁸. CDC proposed to use a Social Accounting Matrix (SAM) approach, which is similar to an input-output model (see above). As mentioned before input-output models are superior to other techniques as they consider the whole economy and the impact of external factors such as external financing. As the CDC new approach explains one of the advantages of using SAM is that it provides the link between the macro picture of an economy or group of economies and micro data from individual investment, provided the overall size of the investment is large enough: SAM can show results of external shocks to the economy as a whole but these shocks (i.e. DFI investment) need to be substantial as they need to impact: production functions and prices. The use of the SAM for understanding the employment impact of DFIs cannot be run for one DFI only, so the problem of assessing the impact on job creation for a DFI cannot be overcome with this methodology.

¹⁷ Pollin, R., Heintz, J. and Garrett-Peltier, H., (2009 June) *The Economic Benefits of Investing in Clean Energy: How the economic stimulus program and new legislation can boost U.S. economic growth and employment*, Centre for America and PERI University of Massachusetts Amherst.

¹⁸ MacGillivray, A., Kim, R., van Moorsel, T. and Kehoe, A., (2017 February), *Measuring Total Employment Effects: a lean data methodology for a portfolio of investments in developing countries*, CDC.
<http://www.cdcgroup.com/Documents/Measuring%20total%20employment%20effects.pdf>

The other work that has been referred to by most is Massa et al. (2016)¹⁹. In this study Massa et al. use two econometric models to arrive at the macro impact of DFIs on: economic growth, labour productivity, and renewable energy use, all these findings are disaggregated by individual DFIs: IFC, EIB, AfDB, DEG, CDC, OPIC, Norfund and “others”.

Their summary findings were as follows: with respect to *economic growth*, they found that a 10% increase in multilateral DFI investments leads to a 1.3% increase in growth in lower-income countries. In addition to that, their analysis found that a 1 % point increase in *DFI investments* as a percentage of GDP leads to a 0.8 percentage point change in the investment-to-GDP ratio. And lastly with regards to *labour productivity*: DFIs have increased labour productivity by at least 3% in 21 low- and middle-income countries.

4. Conclusions

Measuring the impact of DFIs on job creation, poverty reduction and income presents challenges stemming from which methodology to use, data availability but also on the DFI mandates, operations, presence in a country, the size of the portfolio, and sector focus.

Most DFIs report on direct job creation or supported by aggregating data from projects and individual investment. Indirect and induced job creation is captured through standalone studies that only few DFIs have conducted. As DFIs investment become more important in the new international aid architecture, they are increasingly asked to improve their reporting on development impacts. There is still some work to do to improve reporting on these impacts especially in Low Income Countries.

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