When development finance institutions, policymakers, and business leaders are estimating the job-creation effects of their activities, they must look beyond direct jobs generated. They also should consider: (a) indirect jobs, (b) induced jobs, (c) second-order “growth” effects, and (d) net job creation. If an analysis fails to consider indirect jobs created in suppliers and distributors, it likely will underestimate the poverty-reduction effects.

IFC found that only about a quarter of evaluations of employment effects specifically addressed job creation. While most of the evaluations found positive effects of private sector programs on job creation, methodologies varied and so did definitions of what counted as employment. Also, proper counter-factual was not always possible to identify and attribution was sometimes difficult. More rigorous evaluations are clearly needed.

Multipliers, such as the total number of jobs in an economy generated per one direct job, are frequently used to assess and benchmark the job-creation effects of private sector activities. However, they are highly context specific, rarely based on a counter-factual, and vary across industries, within industries across countries, and even within one industry in the same country. Depending on country, industry, and client characteristics, a range of multipliers should be used, and different methods for their derivation may need to be applied.

The focus should be on total job creation, not on the employment multiplier alone. An “investment multiplier,” assessing the total number of jobs provided or created per $1 million invested, also can be informative.

Macro-case studies in Indonesia and Ghana show a trade-off between the number of jobs created and the value-added per job. However, another total study in Tunisia finds that sectors that create the most jobs also provide the highest total value-added per $1 million invested, with a higher proportion of it going to workers’ wages.

1. Introduction

Many development finance institutions, policymakers, and business leaders are interested in being able to estimate the job creation effects of their activities. While data on direct jobs created may be available, it tells only a small part of the story. Jobs created in the supply and distribution chain of the company, jobs created due to increase in demand associated with higher labor income, and jobs created elsewhere in the economy as a result of firms operations have to be considered.

This chapter presents findings from a meta-evaluation that sought to identify tools, and approaches that can be used to estimate the job creation effects. It then presents findings in regard to the economy-wide employment effects of private sector interventions in different sectors from existing industry and academic research, as well as micro- and macro-case studies conducted as part of the IFC Jobs Study.

Definitions

Indirect jobs: employment changes in suppliers and distributors.

Induced employment: jobs resulting from direct and indirect employees spending more and increasing consumption.

Secondary effects refer to job creation through benefits of improved access to infrastructure, such as access to more reliable power allowing enterprises to produce more, and more efficiently.

Net job creation: effects accounting for job losses in competitors.

Value added refers to wages/salaries plus corporate profits plus taxes.
2.1 Estimation of employment effects: Findings on Methodology from the meta-evaluation

Though there is strong consensus that creating jobs is one of the key contributions of the private sector to poverty reduction, there is limited knowledge about which interventions, and in what country conditions, are most likely to catalyze job creation—and which activities are most beneficial to poor people. To address this knowledge gap, IFC conducted a meta-evaluation or review of evaluations. The objective was to determine the employment effects of private sector interventions and the tools and combination of tools that can be used to estimate their effect on job creation, to help shape the strategies and operations of IFC and other private sector-oriented development financial institutions. Additionally, meta-evaluation has highlighted that there are a few areas where more work needs to be done to estimate job creation effects of private sector interventions: reaching a consensus on which activities and types of employment qualify to be defined as a “job”; using a proper counter factual to claim that jobs were “created” due to the intervention and not just associated with it; and creating more rigorous evaluations in cases where a few interventions were implemented simultaneously or more than one investor was involved to establish proper attribution.

The meta-evaluation examined 39 evaluations from 2000–11 commissioned by IFC and other organizations to address the job creation effects of private sector interventions in four areas: access to finance, access to infrastructure, the investment climate, and skills development and training. Due to the diverse set of methodologies applied across different areas, it is difficult to determine the best approach to estimate the job creation effects of private sector interventions.

Only about 27 percent of the evaluations (39 of 147 evaluations, with an employment component extracted from databases of the World Bank Group and other relevant organizations) specifically addressed job creation effects. In addition, evaluations were often not comparable due to different types of employment being considered. There is little agreement in the literature on what types of employment to count. Some researchers only include paid work outside the household (as a proxy for formal employment), while others use a more inclusive definition that incorporates all types of employment (self, family—paid or unpaid—and paid work outside the household). Some studies include direct job creation only; others include indirect or induced effects.

Additionally, a proper counter factual was frequently not established. Ideally, program evaluations would compare the group of program participants with a group of program nonparticipants (control group) that had similar attributes as those that were benefiting from the program. These two groups of individuals/firms would then be tracked over time to see if there were any differences in performance indicators to be evaluated. Having a control group or constructing a “counter factual” can help evaluators determine what would have happened in the absence of the program and can best be used to assess attribution to the intervention. Issues of selection bias—that is, the extent to which various subgroups or target population are likely to participate differently in a program—can also be controlled for using these types of methodologies. An evaluation should ideally begin with construction of a baseline to clearly define the starting point of program participants. Attribution to the intervention can best be supported once a comparison between program and non-program participants is carried out over time by qualified evaluators.

Unfortunately, it is not always possible to construct a counter factual and/or identify a proper comparison group. There may be various reasons that go beyond the control of the evaluators that could limit the scope of an evaluation. For example, the evaluator may come across the following constraints: (i) incomplete/outdated contact information, (ii) refusal to participate in a survey, (iii) firm attrition, (iv) not being able to identify a similar group to interview as they do not exist, (v) sample size restrictions, (vi) budget restrictions, (vii) low levels of available qualified survey firms, (viii) legal, ethical or practical issues, among many others.

As a result, qualitative evaluations can complement some quantitative approaches by examining some of the subjective aspects of the services received (e.g., satisfaction rates, perceived outcomes and/or impacts from the intervention).

Additionally, evaluations that encompass longer time horizons (in particular in the case of skills and training and investment climate projects) would strengthen the robustness of the effects of private sector interventions on job creation. In the case of investment climate projects, longer evaluation time frames may be needed to estimate the final job creation effects from the reforms. For skills and training programs, evaluations after longer periods of time will allow for: (i) a better assessment of the stability and quality of employment after the program has ended, and (ii) the impact created (in case of managerial and entrepreneurial training.) Regarding the first point, while quality and duration of employment after training may be important metrics, almost no evaluations addressed them. This could be due to relatively short follow-up periods after the training took place. Secondly, there is some evidence that managerial training programs do increase the profitability and productivity of
the affected firms. This could translate into positive employment effects in the long run, but the evaluations typically did not assess those effects. Thus evaluations with only one follow-up within a relatively short period of time may not be capturing the entire employment effects.

2.2. Findings from the meta-evaluation by area of intervention

Access to Finance: Twelve evaluations were reviewed in the Access to Finance area. They focused on the provision of loans and advisory services to micro, small, and medium enterprises as well as the households. The evaluations were conducted in Bosnia and Herzegovina, Bangladesh, China, Ghana, India, Maldives, Mexico, Mongolia, Morocco, Sri Lanka, and Vietnam. Different methods of analysis and data collection ranging from anecdotal evidence to experimental designs were utilized. Overall, it was found that improving access to finance can help firms expand their operations, which can have a positive effect on the quality and number of jobs created. The effects tend to be greatest for smaller firms. Combining access to finance with advisory services also tends to have a more positive effect on employment generation. Moreover, through quantitative approaches, it was found that improving access to finance for micro-enterprises can create jobs both through the establishment of new businesses and through the expansion of already existing ones. The latter effect tends to dominate in rural settings. Investments in the services sector in urban areas and in agriculture in rural areas tend to create the most jobs. Collective loans are likely to have stronger effects on employment than individual ones.

Access to Infrastructure: Seven evaluations and one meta-evaluation were reviewed under Access to Infrastructure. The job creation effects were overall positive across the different sectors reviewed, which were roads, power, water, ports and telecommunication infrastructure. From a methodological point of view, two-thirds of the evaluations were quantitative, but not all were able to construct a proper counter factual to evaluate the effect of the intervention on job creation. However, in some cases, a quasi-experimental approach matching treated regions with possible controls was successfully implemented to account for a proper counter factual scenario. This is particularly replicable in cases where projects affect smaller areas/groups and data are available to match them with comparable non-affected areas/groups. The predominant effects on employment tend to be indirect. Furthermore, some evaluations not only managed to capture economy-wide effects in addition to direct job creation but also differentiated between employment generated by construction and maintenance phases. Road rehabilitation projects could negatively affect employment in local manufacturing sectors by making imports cheaper, but overall tend to have positive effect on economic growth and employment. Interestingly, most evaluations focused on jobs created during construction and maintenance of the infrastructure asset but ignored the most crucial development impact of infrastructure - the second order growth effects - or jobs that are created because a crucial constraint is relieved, for example reliable power supply that helps firms expand their output and create more jobs.

Investment Climate: Eight evaluations were reviewed under investment climate. These evaluations were conducted in Brazil, Burkina Faso, Liberia, Mexico, Peru, Portugal, Rwanda, and Sierra Leone. Seven showed to have had positive economy-wide effects on job creation, while the license simplification reform evaluation showed no effect on any firm performance indicators, including income, credit, or jobs. The seven evaluations that showed positive effects focused primarily on business entry/registration reform, investment promotion, and tax simplification. Overall, it was found that these types of investment climate reforms tend to lead to the creation of new firms, which can have positive employment generation effects. Yet firms that enter after the reform may be less likely to survive their first two years than firms that entered prior to the reforms. So even though new jobs may be created, their duration and quality are not always clear. Additionally, the following caveats also need to be taken into consideration when assessing the economy-wide effects of investment climate reforms that were not able to construct a proper counter factual: (i) all had issues with attribution and could not account for other factors or interventions that could have influenced the results; (ii) due to the nature of the reform (i.e., legislative and regulatory reforms), it was difficult or impossible to construct a counter factual; and (iii) the time frame needed to estimate the effects on job creation is long and often would need to be extended beyond the project lifetime.

Skills and Training: Eight evaluations, two meta-evaluations, and one meta-analysis were reviewed under skills training. The interventions included youth training, training for unemployed, retraining, and managerial training. Evaluations were mainly carried out in the Latin American and the Caribbean region and Eastern Europe, with one evaluation in South Asia. Results were mixed. Additionally due to variation in intensity, content, duration, and target population of the training programs, results are not always readily comparable. Managerial training was not found to have an impact on either the survival of the business (linked to the stability of the job) or on the number of employees. However, it was found to have a positive effect on business practices, profitability, and investments by the business. This is consistent with an evaluation that showed that supervisory training programs can have a positive effect on employee and manager work relations and worker productivity.
Together these may be linked to positive employment effects in the long term. Vocational training for youth was deemed successful in some but not all countries in increasing the probability of being employed after the training was received. Wages and future earnings were found to be higher after the training. The probability of being formally employed was found to be affected positively across all the evaluations that tracked this outcome indicator, and job quality also tended to have improved after the training. Combining in-class training with on-the-job training also tended to have positive effects. Vocational training seemed to also be more beneficial for women and disadvantaged youth across all the evaluations reviewed.

3. Data on direct jobs and some caveats

At present, IFC tracks information on direct jobs that are being provided in client companies. In 2011, IFC client companies provided some 2.5 million jobs. But direct jobs tell only a small part of the story and can be misleading. For example, judging by the indicator “number of jobs created per million dollar of project costs,” $1 million invested in some sectors (such as wholesale and retail trade, services, and health care) is associated with adding many more direct jobs than similar investment in others (such as heavy industries or power generation).

While retail is ranked the highest in terms of additional jobs per million dollars of project costs, this number does not take into account job destruction in competing stores. A FAO/EBRD 2011 study on the retail sector in Poland, Bulgaria, and Romania finds both significant job creation in modern retailers and significant job losses in competitors, with the former effect being larger. Additionally, in all three countries, while employment in the retail sector clearly increased, part of it can also be attributed to shift from self-employment to wage employment. Furthermore, the FAO/EBRD study also cites a study from the United States, which found that for every hundred jobs added by introducing modern retail stores, fifty were lost in competing enterprises over the next five years. So the net job creation effects were still positive, but only half of what direct job numbers would indicate.

At the same time, while oil, gas, and mining is ranked less favorably in terms of direct jobs added in association with $1 million invested, according to a recent study, this sector can generate jobs through significant indirect and induced employment effects. A study of a gold mining company in Ghana—an IFC client—suggests that about 28 jobs in the economy were associated with one direct job in the mine. This number is significantly higher than what is usually found in extractive industries investments. This can be explained by the fact that in addition to its investment, IFC provided assistance in strengthening a community development program and supply chain linkages, which most likely helped to bring about these strong results.

Lastly in case of some sectors, such as tourism, only accounting for the direct effects of projects misses their potentially high development impact, including the impact on job creation. For example, a large part of economy-wide job creation associated with investment in hotels happens through indirect job creation in hotels’ suppliers and contractors, job creation due to spending by hotel guests outside the hotel, and hotels attracting business into the area.

4. Economy-wide effects and multipliers: theory, practice, and limitations

While rigorous evaluations are the ultimate way to establish job creation results of private sector interventions, for benchmarking purposes various multipliers are used to assess possible economy-wide employment effects of development projects in the private sector, including: total number of jobs in the economy per number of dollars of project cost, or per number of
dollars of investment, or per number of direct jobs created. Frequently, it is hard to establish causal links while using multipliers unless a counter factual was employed, and thus they are best suited to be approximation benchmarks and should be used with caution.

Most of this chapter focuses on the multipliers that address the total number of jobs in the economy associated with one direct job in a client company, since this is the metric easiest to track and thus most commonly tracked by development finance institutions (DFIs). However, due to the large variation in such multipliers, another measure that might be particularly relevant for DFIs is the number of jobs created per million US dollars invested.

Two types of employment effects are most commonly estimated with regard to employment: indirect and induced. Indirect employment refers to changes in employment up and down a client’s supply and distribution chain. Induced employment captures employment resulting from increased demand associated with extra income, e.g., from wages. Their definitions and relevant multipliers are presented in Box 3.1.

<table>
<thead>
<tr>
<th>Effect</th>
<th>Definition</th>
<th>Multiplier (number of jobs created in the economy for each direct job)</th>
</tr>
</thead>
</table>
| Indirect employment effect  | Change in employment in a client’s supply and distribution chain           | Type I = 
# Direct Jobs + # Indirect Jobs
# Direct Jobs                  |
| Induced employment effect   | Change in employment resulting from increased demand associated with extra labor income generated by new jobs | Type II = 
# Direct Jobs + # Indirect Jobs + Δ Induced Jobs
# Direct Jobs                  |

These effects are usually estimated for a given geographic unit (county, state, country, region, etc.) The larger the unit, the bigger are the effects.

However, the magnitude of these effects also depends on various political, economic, and behavioral factors. For example, indirect job creation will reflect the extent to which the content is sourced locally. This might allow interventions such as supply chain linkage strengthening to have positive effects on job creation. Nevertheless, it is important to note that such effects are likely to only be positive from the point of view of the overall economy if domestically procured goods and services are competitive; where they are not, this could actually have negative effects on economic growth and ultimately employment. Induced employment effects depend on the fraction of income spent versus saved, as well as the fraction of income spent locally.

4.1 Limitations on the use of multipliers for the estimation of economy wide effects (theory)

Methodologies used to estimate job creation multipliers range from using input-output (IO) tables to case studies that rely on interviews with key suppliers/distributors.

With the exception of randomized control experiments and quasi-experimental studies, one of the main concerns remains the attribution of the observed, estimated, or predicted job creation effects of a given intervention.

However, besides attribution there are a few more concerns with the use of multipliers for estimation and prediction of the job creation effect of private sector interventions. A few studies point out that multipliers often tend to overstate the employment creation effects of projects. The extent of this problem can be such that if one adds up the effects for the entire economy, the employment created would be larger than the whole population. Furthermore, in sectors in which a significant portion of the employment effect comes from enabling other businesses to grow or be created—e.g., infrastructure—multipliers might not capture the whole story. In such cases, other quantitative impact evaluation techniques, like experimental or quasi-experimental designs (regression discontinuity, difference-in-differences, etc.) might yield more reliable and more accurate results.

Multipliers, independent of the methodology, might overstate the effects for the following reasons: First, it is often assumed that trading patterns are fixed. This means that it is predicted that new firms will buy from local industries in the same proportion as existing firms in the area and that local suppliers are able to increase their output to supply the new firms. Second,
incoming firms are not always a net new source of economic activity; in fact they can take business away from existing firms. Third, due to the often varying relationship between industries, the indirect economic impacts indicated by multipliers may not occur.

Models used to derive the IO tables are linear and do not allow for scale effects, or for the substitution possibility toward cheaper inputs, or for increases in productivity. Additionally, constraints on worker availability are highlighted by many studies as one of the main shortcomings of using multipliers from IO tables. This is particularly relevant in the case of skilled workers. According to a recent study by McKinsey Global Institute, even in the US shortages of appropriately skilled workers are predicted to occur due to a disparity between educational choices and the skills needed in industries likely to grow. Major imbalances are also predicted for developing countries.

Lastly, multipliers represent a snapshot of an economy at a particular point in time. Thus we have little information on the pattern of employment growth depending on the age of companies in the sector, changes in its capital intensity, etc.

4.2 Estimation of multipliers and economy-wide effects (practice)

The study has identified 23 case studies/articles that attempted to estimate indirect and induced job creation effects of various projects and industries. Methodologies ranged from IO tables to case studies that rely on interviews with key suppliers/distributors. Information from five micro-case studies conducted by IFC in agriculture (Ukraine), agro-processing (Bangladesh and Indonesia), manufacturing (South Africa), and cement (India) was also considered. Both sources point to the importance of measuring economy-wide or at least the indirect job creation effects of private sector interventions. At the same time they highlight the difficulty of achieving this goal by showing that multipliers are highly context specific, and therefore replication is cautioned against.

Both the review of external research and all five micro-case studies identify significant indirect job creation associated with investment in a client company/industry. In Chile, for example, a private mining company created twice as many jobs as a state-owned mining company, when direct, indirect, and induced jobs are considered. However, the state-owned mining company created more direct jobs. Thus it is likely that measuring only direct jobs underestimates the job creation effects of manufacturing, agriculture, and services projects.

The highest number of indirect jobs produced in the supply or distribution chain depends on the sector, on the proportion of operations a company outsources in both supply and demand chains, and on whether the firm is an exporter or is oriented toward the domestic market. For example, four out of five case studies suggest it is useful to think beyond the supply chain to include also the distribution networks when seeking to identify indirect employment effects. Employment in the latter is more localized compared to the former, since global supply chains are increasingly integrated. However, the case study of Ecogreen, an Indonesian agro-processor is an exception. Most of the indirect jobs in this case are generated in the supply chain. This can be explained by two factors: the main input, which represents 86 percent of the cost of goods, is sourced locally, and Ecogreen is primarily an exporting firm that relies on its own transportation networks.

However, multipliers derived from the case studies are highly context-specific. They depend on the base year (which might be indicative of a particular point in the sector’s life cycle), country, region, and firm characteristics.

For example, multipliers for the same firm might change depending on the year when the study is conducted, as illustrated by the Mriya case study, where the multiplier changed from 10.5 to 4.7 depending on which base year was used.

As countries develop, job multipliers are likely to decrease, but the value added per job is likely to be higher. For instance, the multiplier for the Orissa Cement Ltd. (OCL) case is quite high because India has an abundant supply of unskilled labor; and, unlike in the more advanced countries, the cement sector in India is less mechanized. Cross-country variation of multipliers in the global mining sector can be used as another example. Approximately seven jobs are supported in the economy for each direct one in the private sector firm in Chile, while about five are supported in the US, and only about 2.5 in Scotland.

External research also suggests that differences in magnitudes of multipliers might also reflect just differences in management style or firm organization. Companies that tend to outsource more will have higher multipliers, for example. This implies that comparisons or use of multiplier estimates to predict job creation effects of projects should be carefully addressed. Table 3.1 presents a sample of various multipliers identified by the study in order to illustrate the wide variation.
As is evident from Table 3.1, there is significant variation in the magnitude of indirect and induced effects. The magnitude depends on various political, economic, and behavioral factors. For this reason, these effects are usually estimated for a given geographic unit (county, state, country, region, etc.), and the larger the unit, the bigger the effects.\textsuperscript{12}

The size of multipliers also depends on: a) the fraction of income that new employees spend versus what they save; b) the fraction of income spent locally vs. abroad; c) whether it is an urban vs. a rural area; and d) whether we are referring to skilled or unskilled labor. These imply that induced effects will be larger if workers are hired locally versus abroad because they will likely induce an increase in local consumption. Multipliers also tend to be higher for industries located in urban areas, because more of the industry’s spending is likely to stay within the area.

However, higher multipliers are not always desirable and do not necessarily translate into higher total employment. As illustrated above, differences in magnitude may simply reflect differences in management styles. Some studies point out that private sector companies tend to outsource more, which will result in a higher proportion of indirect jobs relative to direct ones, but not necessarily more jobs in total. Additionally, high multipliers might be indicative of low labor productivity or higher informality in a given country. Less developed countries tend to have larger indirect employment effects than more developed countries due to higher labor intensity of production, as pointed out in one study. Meanwhile, high multipliers might be a reflection of relatively closed economies, which would mean higher consumption of local products and lower imports. However, this may also result in higher prices and lower a country’s economic growth potential.

<table>
<thead>
<tr>
<th>Sector / Industry</th>
<th>Total number of jobs (direct, indirect, induced) in the economy for each direct job in a sector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture</td>
<td>1.2 (Chile) 2 (US and Scotland) 3 (Tanzania)</td>
</tr>
<tr>
<td>Mining</td>
<td>2.5 (Scotland) 5 (US) 7 (Chile) 28 (Ghana)</td>
</tr>
<tr>
<td>Financial services</td>
<td>14.9 (Indonesia) 19 (Ghana)</td>
</tr>
<tr>
<td>Oil and gas</td>
<td>7.5 (US) 13.4 (Scotland)</td>
</tr>
<tr>
<td>Hotels</td>
<td>1.24 (Scotland) 2.66 (Tanzania)</td>
</tr>
<tr>
<td>Retail</td>
<td>1.27 (Chile) 1.31 (Scotland) 1.89 (US)</td>
</tr>
<tr>
<td>Cement</td>
<td>2.47 (Scotland) 4.45 (US)</td>
</tr>
</tbody>
</table>


*These multipliers are type II, and they measure the number of direct, indirect, and induced jobs for every direct job.
**IFC Micro-Case Studies Summary**

**Ecogreen:** Ecogreen, located in Indonesia, is the fourth largest producer and exporter of natural fatty alcohols in the world and the largest from an emerging market. IFC has financed Ecogreen’s expansion plan and its working capital needs since the Asian crisis. Based on interviews and financial data, that incremental capacity since 2005 has created about 177 direct jobs, 64 percent of which were high skilled and high value-added. The analysis also estimates about 3,646 indirect jobs in the domestic supply chain, of which an estimated 73 percent are unskilled and low skilled, with workers receiving wages above the minimum wage. The gains in indirect jobs are coming primarily from the supply chain.

**Mriya:** Mriya, an agricultural group in Ukraine, was granted two loans by IFC in FY10 and FY11, totaling US$60 million, to assist in expanding its capacity and financing its working capital needs. This incremental capacity created about 7,390 additional indirect jobs over a period of two years, of which more than 80 percent were in distribution. An additional $1 million of project cost is associated with 28 additional direct jobs and 67 indirect jobs. The estimated multiplier varied between 10.5 and 4.7, depending on the year of estimation. This drastic change in the multiplier was due mainly to the rapid increase of direct jobs at Mriya.

**Orissa Cement Limited:** IFC granted a loan to partly finance Indian cement manufacturer OCL’s capacity expansion and the setting up of a greenfield plant. This incremental capacity created about 300 direct jobs and 7,200 additional indirect jobs over a period of four years, of which 65 percent were in the distribution network. An estimated 1.5 direct jobs and 40 indirect jobs, of which close to 70 percent were unskilled, were associated with $1 million of project cost.

**PRAN Dairy:** PRAN is a leading agro-processing firm in Bangladesh. IFC helped finance its capacity expansion in several sectors, including dairy, and to directly expand its dairy operations. Based on interviews with farmers, packagers, and distributors connected with PRAN's dairy operations, its incremental milk-processing capacity of 50,000 liters per day may be associated with about 2,200 indirect jobs over a period of three years, many more than the 300 direct jobs created during this time. Thus every million US dollars in project costs translate to over 40 indirect jobs compared to about six direct jobs. Moreover, almost 80 percent of the incremental direct jobs were in rural areas, and there is anecdotal evidence of increased income for farmers.

**Safal:** IFC has financed Safal’s production expansion in Kenya and Tanzania and a greenfield project in South Africa, and supported the setting up of nine roll forming centers in Africa. Analysis based on interviews and financial data found that this incremental capacity since 2007 created about 2,450 direct jobs, about 50 percent of which are skilled, and 24,000 indirect jobs in its distribution channels across the region, of which an estimated 65 percent are unskilled and lower skilled.

**Conclusions:**

**Significant Indirect Effects**

Even though these case studies are likely to underestimate the indirect job creation effects (by focusing only on key suppliers), they already show that these are significant compared to direct job creation. On the other hand, it is important to note that potential job losses in competitors were not considered and attribution remains a problem.

**Significant Poverty Reduction Effect via Indirect Jobs**

Compared to direct jobs, indirect jobs are frequently more likely to be located in rural areas and to be low-skilled, thus creating income-generating opportunities in some of the poorest areas.

**Large Indirect Employment in the Distribution Network**

Most indirect employment came from the distribution network as opposed to the supply chain. This could be due to companies outsourcing fewer jobs in the supply chain, or more inputs being imported from global supply chains. The only exception is the case study of Ecogreen, where large indirect effects come from the supply chain. This is likely to be explained by the fact that the main raw material used in the production accounts for about 86 percent of costs of goods and is entirely sourced locally, while most of Ecogreen’s products are exported using its own transportation facilities.

**Caution in Replication of Multipliers**

Studies highlight that multipliers are highly dependent on the regional, local and industry context. Furthermore, they vary with the maturity of the company, the distribution channel model used by a specific client as well as the cost and availability of labor. Also, in the case of volume-driven businesses, one of the questions is whether using a jobs multiplier is the best way to estimate indirect employment effects, or whether estimations based on quantities bought or sold may result in more reliable estimates.

Sources: IFC Job Study micro-case studies.
5. Macro-case studies: Number of jobs created per 1 million US dollars invested.

Due to the high-variation in multipliers assessing total jobs created in the economy per one direct job, another relevant measure that mitigates some of these problems and that could be particularly relevant for the DFIs is the total number of jobs created per 1 million US dollars invested. The tables below present this type of multipliers based on three out of four macro-case studies conducted as a part of the IFC Jobs Study.

**Table 3.2: Value-added and employment associated with financing of $1 million in Jordan**

<table>
<thead>
<tr>
<th>Channel</th>
<th>Economy-wide value added related to $1 million ($ millions)</th>
<th>Economy-wide employment related to $1 million ($ millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Direct / Indirect</td>
<td>Induced Effect</td>
</tr>
<tr>
<td>Agriculture</td>
<td>3.8</td>
<td>+ 41%</td>
</tr>
<tr>
<td>Industry</td>
<td>1.3</td>
<td>+ 32%</td>
</tr>
<tr>
<td>Services</td>
<td>0.5</td>
<td>+ 30%</td>
</tr>
<tr>
<td>Weighted Average</td>
<td>0.7</td>
<td>+ 32%</td>
</tr>
</tbody>
</table>


**Table 3.3: Value-added and employment associated with financing of $1 million in Ghana**

<table>
<thead>
<tr>
<th>Client Segment</th>
<th>Economy-wide value added related to $1 million ($ millions)</th>
<th>Economy-wide employment related to $1 million (number of jobs)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Direct / Indirect</td>
<td>Induced Effect</td>
</tr>
<tr>
<td>Agriculture</td>
<td>2.57</td>
<td>+ 29%</td>
</tr>
<tr>
<td>Industry</td>
<td>0.69</td>
<td>+ 27%</td>
</tr>
<tr>
<td>Services</td>
<td>0.79</td>
<td>+ 25%</td>
</tr>
<tr>
<td>Weighted Average</td>
<td>0.74</td>
<td>+ 26%</td>
</tr>
</tbody>
</table>


**Table 3.4: Value-added and employment associated with 1 million $ financing in Tunisia**

<table>
<thead>
<tr>
<th>Economic Sector</th>
<th>Economy-wide value added associated with USD 1 million</th>
<th>Economy-wide employment associated with USD 1 million</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Direct / Indirect</td>
<td>+ Induced</td>
</tr>
<tr>
<td>Food Processing</td>
<td>5.4</td>
<td>+ 26%</td>
</tr>
<tr>
<td>Construction</td>
<td>5.3</td>
<td>+ 27%</td>
</tr>
<tr>
<td>Agriculture</td>
<td>3.6</td>
<td>+ 31%</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>3.0</td>
<td>+ 23%</td>
</tr>
<tr>
<td>Transport</td>
<td>2.8</td>
<td>+ 28%</td>
</tr>
<tr>
<td>Utilities</td>
<td>2.4</td>
<td>+ 20%</td>
</tr>
<tr>
<td>Mining</td>
<td>2.4</td>
<td>+ 18%</td>
</tr>
<tr>
<td>Public Service</td>
<td>2.3</td>
<td>+ 41%</td>
</tr>
<tr>
<td>Business Services</td>
<td>1.9</td>
<td>+ 25%</td>
</tr>
<tr>
<td>Communication</td>
<td>1.5</td>
<td>+ 25%</td>
</tr>
<tr>
<td>Trade</td>
<td>1.1</td>
<td>+ 25%</td>
</tr>
<tr>
<td>Weighted Average</td>
<td>USD 2.9 min</td>
<td>+ 26%</td>
</tr>
</tbody>
</table>

As a part of the Job Study, IFC conducted macro-case studies in four countries: Ghana, Jordan, Sri Lanka and Tunisia. The goal of these studies was to assess the socio-economic impact of IFC’s financing in these countries. Employment associated with IFC investments is one of the parameters evaluated.

In Jordan, IFC’s lending activities in 2011 were directly and indirectly associated with supporting at least 9,100 jobs (0.6 percent of the employed labor force). The effects are predominantly direct, with most of the jobs requiring medium skill.

In Ghana, IFC’s lending activities in 2011 were directly and indirectly associated with supporting at least 36,700 jobs (0.4 percent of the labor force). As opposed to Jordan, in Ghana most of the effect comes from indirect jobs.

In both Ghana and Jordan for most of the sectors (excluding transportation), higher employment is associated with investment in financial institutions (FIs).

In Tunisia, investing in agriculture creates the largest quantity of employment, while investment in food processing creates the largest value added compared to investing the same amount in other sectors. At the same time, financing agriculture maximized the salaries/wages earned by workers. The public sector in Tunisia also offered relatively high salaries and wages.

In Sri Lanka, investing in business services creates the highest value added in terms of wages/salaries for workers, while investing in agriculture creates the highest profit for companies, for the same amount invested.

While investments, through financial intermediaries created more jobs, investments in real sector companies tended to be associated with higher value-added per job, and may be more likely to be ‘transformative’ (e.g. through demonstration effects or by strengthening local linkages).

Based on these tables, one can notice that this type of multiplier is highly economy-specific. However, it has the advantage of being based on an economy-wide study and thus being less dependent on the specifics of one particular company, as was the case with multipliers from the micro-case studies.

However, this multiplier is also based on many assumptions, and thus has less precision. These multipliers are usually derived using IO models, the limitations of which have already been discussed above. Moreover when the context is economy-wide, another aspect becomes important. One of the critical drawbacks of input-output models is that they are based on historical production functions. They will work well in cases where additional capital is applied to existing sectors and companies. They do not work well for investments that are expected to “transform” an economy, e.g., by introducing much higher labor or total factor productivity, possibly introducing a new sector with subsequent demonstration effects, etc. And these effects can be very “real”: For example, a US study found that total factor productivity increased by 12 percent in counties that were able to attract large manufacturing plants (compared to a control group of counties). Evidence in developing countries of such productivity effects associated with foreign direct investment is more mixed and appears to depend on various factors, for example the technological gap between foreign and domestic companies.

However, even with this variation, based on these three case studies in specific countries, the agricultural sector leads in terms of both total value-added and number of jobs supported compared to the other sectors for the same amount of financing. The only exceptions are Tunisia and Sri Lanka, where while still leading in terms of number of jobs created, the agricultural sector creates less value added associated with the same amount of financing compared to either business services in Sri Lanka or to food processing and construction in Tunisia. However, the value added per job in the agricultural sector tends to be very low, and one of the key development challenges is to raise productivity in that sector. These four case studies provide different insights, illustrating that country specifics are clearly important for identifying the best sectors to invest in, and that the choice may differ depending on whether the goal is to maximize jobs, value added, or workers’ incomes.

### IFC Macro-Case Studies Summary

As a part of the Job Study, IFC conducted macro-case studies in four countries: Ghana, Jordan, Sri Lanka and Tunisia. The goal of these studies was to assess the socio-economic impact of IFC’s financing in these countries. Employment associated with IFC investments is one of the parameters evaluated.

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### 6. Trade-off between value added and number of jobs created

As mentioned earlier, there is some evidence of a possible trade-off between value added per job and the number of jobs created. Value added is defined as corporate profits, household income, and taxes. This information is useful for understanding the connection between the number of jobs in each sector and economic growth. However, from a development and efficiency perspective, the following two facts will also matter: (i) the breakdown of value added between labor and capital,
and (ii) value added per $1 million invested, preferably broken down between workers, capital owners, and government.

The macro-case studies conducted in Tunisia and Sri Lanka as a part of IFC's Jobs Study do exactly this (see Figures 3.1 and 3.2). The macro-case studies in Tunisia and Sri Lanka find that sectors that have the highest overall value added per $1 million of investment also tend to create the highest value added for workers per $1 million of investment. In Tunisia they are roughly the same ones that create the most jobs. Thus this higher value added to workers can be coming from the number of workers benefiting and not necessarily from higher compensation. At the same time in both Tunisia and Sri Lanka sectors that have the highest value added per job tend to have lower overall value added per $1 million invested, and a smaller proportion of this value added goes to the workers, which basically means they tend to be more capital intensive.

### 7. Net job creation

“Net” job creation should be kept in mind when total employment effects are estimated. This concept is utilized in two ways, depending on whether the impact on job creation that has already occurred or predictions of future job creation are being measured. In case of estimating creation effects, “net” job creation refers to jobs created minus jobs destroyed as a result of a given project elsewhere in the economy. In case of predictions of job creation impacts, “net” job creation sometimes refers to jobs predicted to be created minus the number of jobs predicted to be created in a valid counterfactual scenario.

New firms can create new jobs, but they can also cause job losses for their competitors, and this can affect overall job creation, as was illustrated in Section 3 in the example of the retail industry.

Studies that consider a counterfactual could indicate the number of net jobs created or destroyed compared to specified alternatives. In some cases, while gross impact may look impressive, the net impact—after comparison with an alternative—may be much smaller. This is particularly relevant for energy and infrastructure studies. For example, one study compares targets of Solar America Initiative to the alternative of providing the same amount of electricity generated through new gas-fired plants. The gross impact of solar production was 49,370 direct, indirect, and induced jobs, but the net impact was only 15,580 jobs for the same period, with negative effects on direct net employment. Thus, comparison to an appropriate counterfactual can significantly lower the predicted gains.
However, assessing “net” job creation effects is very difficult: When we assess job creation, it usually refers to jobs that can be linked to a certain investment. However, what the net effects will depend on is the relative elasticity of the job supply. In countries with very high unemployment rates, job creation will usually be in the form of drawing previously under- or unemployed people into the labor force. In countries with large informal sectors, creating formal sector jobs may pull workers from the informal into the formal sector. And in countries that are already close to full employment, job creation will likely come in the form of attracting workers into higher value-added jobs that offer higher wages and benefits.

8. Conclusion

The number of direct jobs created by private sector activities gives an incomplete picture. For sectors such as tourism — in particular, hotels—or heavy industry, looking at direct jobs alone might lead to a severe underestimation of the development impact. Furthermore, micro-case studies suggest that the majority of indirect jobs created tend to be low-skilled and in poor rural areas, which are priority areas for many policymakers.

Thus, development finance institutions and their clients should aim to estimate and benchmark the economy-wide job-creation effects of their projects. IFC reviewed previous evaluations of the effects of private sector activities on job creation conducted by various development finance institutions, think tanks, nonprofit institutions, academia, and governments. We found that for these evaluations are not easily comparable, need to be more rigorous, do not cover longer time horizons, and do not adopt the same definition of “employment.”

Rigorous evaluation to estimate job creation effects, is not always feasible. Thus it is common to use various employment multipliers, such as the total number of jobs in an economy created per one direct job, for approximation and benchmarking. However, these employment multipliers are rarely based on proper counterfactuals, so one has to be cautious with their replication and with using them for causal claims. The employment multipliers also are highly context specific, varying a lot depending on management style, the capital intensity of a particular project, the business cycle, and the regional and country context. Even for benchmarking purposes, development finance institutions should use a range with lower and upper bounds.

It is generally more important to consider the overall employment effects than the multiplier alone. Thus a multiplier assessing the total number of jobs per $1 million invested can be informative. There is still variation, as this multiplier is highly specific to a particular economy. Additionally, even compared with the other multiplier, it is based on strong assumptions that for example rule out “transformation of the economy.

When deciding on investments in different sectors, development finance institutions must balance a few, sometimes competing, objectives, such as profitability, development impact, growth, job creation, and income generation. There can be a trade-off between the number of jobs created and the value-added per job (and the proportion of it going to workers), but not necessarily the value-added per $1 million invested. However, as the macro case studies illustrate, it is evident that these trade-offs are country specific, and thus the prioritization also may differ by country.
References


Steward Redqueen (2012c) “Modeling the Socio-Economic Impact of Potential IFC Investments in Tunisia.”


Endnotes

1 Jobs created in the client firm in case of DFIs, or jobs created in the industry in case of industry-level evaluations.

2 Survival rates for firms are quite low, especially when it comes to micro, small, and medium firms. Firms may exit the market because they are notable to compete in the current business environment; they can also exit because entrepreneurs found better opportunities elsewhere.

3 Job “provided” are provided by an IFC client company at a certain point in time. Jobs “created” are changes in the number of jobs provided from one point to another. Job creation cannot be exclusively attributed to IFC’s financing.


5 Based on micro-case studies of hotels in Ukraine, Peru, Rwanda, and Turkey.


7 This conclusion most likely can be extended to other sectors such as infrastructure, but the existing case studies only focused on projects in manufacturing, services, and agriculture.


9 Ibid.

10 This number considers only petroleum refineries.

11 This number is for California only, not the whole country.


13 Steward Redqueen (2012a), (2012b), (2012c) and (2012d)


16 Sustainable Energy Department of the World Bank (2011).