

**JOBS
WORKING
PAPER**
Issue No. 7

Economic Analysis of Jobs Investment Projects

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Guidance Note



WORLD BANK GROUP
Jobs

Guidance Note on the Economic Analysis of Jobs Investment Projects

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August, 2017



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ABSTRACT

This Note systematizes the economic evaluation of Jobs Investment Projects. It explains the limitations of past approaches that have regarded jobs only as a by-product of growth. It focuses on market failures that create a gap between the social and private return on investments and reduce the number of good jobs below the socially optimal level. Two of these market failures are: labor externalities arising from the divergence between the market price and opportunity cost of labor; and social jobs externalities linked to improved jobs outcomes for groups such as youth, women, and the extreme poor. These externalities can amplify other market failures such as learning spillovers and coordination failures. The analysis is integrated within a Cost-Benefit framework, to facilitate decision making around jobs investment programs. The Note discusses applications to different sorts of projects: those that focus on improving the labor supply and labor market matches; those that focus on strengthening firms' demand for labor; and integrated projects, that include both types of interventions.

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1. BACKGROUND AND MOTIVATION

This Note systematizes approaches to economic evaluation of investment programs that are focused on improving jobs outcomes in middle and low income countries. Such programs may aim to accelerate job creation and productivity growth in the formal sector of the economy; to improve the quality of informal jobs; or to connect vulnerable groups (e.g., women, youth, the poor) to higher productivity jobs.

In the past, job creation and labor productivity growth – and the corresponding gains in earnings - have normally been viewed as a by-product of economic growth. So the emphasis was on policies to address constraints to investment and innovation. In the well-known “Growth Diagnostics” framework these are broken down into: (a) market or regulatory failures that reduce private rates of return on investments; (b) obstacles to the appropriation of returns by investors; and (c) financial market deficiencies that preclude access to the capital needed to finance potentially profitable investments (Hausmann, Rodrik and Velasco, 2005). Common interventions suggested by this framework include: fiscal and monetary policies that promote macroeconomic stability; reforms to business regulations to promote competition and innovation; developing adequate infrastructure to reduce transactions costs; institutional reforms to strengthen governance and property rights; and investments in human capital.

However, the link between private sector investments, growth and jobs remains poorly understood. Policies that increase investment and maximize the returns to capital do not necessarily generate the type or distribution of jobs needed to address problems such as youth unemployment, low female participation rates, inequality or poverty. There is a large variance in patterns of investment, growth and job creation across countries and regions (Farole, Ferro and Gutierrez, 2017). In different sectors, a given amount of investment generates different numbers of jobs (which can even be negative); and different compositions of jobs, in terms of the workers’ age, gender and skills (The World Bank, 2015). There is also often path dependence in the spatial allocation of investment and job creation. As a result, rural regions - where most poor or vulnerable workers live – typically offer few good job opportunities (Merotto et al, 2017).

This Note argues that a major reason for the disappointing jobs outcomes of traditional pro-growth policies is that they ignore the externalities linked to the creation of better jobs². There are two different sorts of externality to bear in mind. First, there are *social externalities* related to jobs. For instance, if society has preferences for reducing poverty and or inequality, sustainable jobs for poor people will have a social externality. Similarly, in FCV settings, there can be social externalities linked to jobs for young men, which reduce the risks of criminality and radicalization and contribute to social stability. Jobs for young women can also produce externalities, by facilitating human capital accumulation in their children, partly through reduced fecundity, which leads to health and nutrition gains for children, and partly through increased women-controlled incomes, leading to more spending on early childhood development. Finally, when having a job leads to skill acquisition through “on the job learning”, society benefits from increased future production capacity.

Second, in the presence of high unemployment and/or underemployment, the market price of labor can deviate from the opportunity cost of labor, generating a “*labor externality*.”³ Firms considering a new investment calculate the internal rate of return based on the market wages they expect to pay. But when many workers are unemployed or underemployed, the economic opportunity cost of labor can be well below market wages. The difference can be considered a “labor externality” – that is, the firm doesn’t take into

² For a general discussion of the concept of externalities, see The Economist, 2017b.

³ See Jenkins, Kuo and Harberger, 2011, page 2.

account the social benefits of not having labor resources idle; including the benefits to workers whose incomes would rise due to the investment. This an important issue in many middle- and low-income countries, which are characterized by structural unemployment for some population groups (e.g. youth) and by under-employed labor engaged in low productivity jobs in traditional sectors.

The prevalence of low private returns to firms from projects that incorporate low-skilled labor from traditional activities into the modern sector of the economy is a key reason why the jobs outcomes of growth promotion efforts in LICs have often been disappointing.⁴ But when jobs related externalities are taken into account, such projects can often become economically viable. The externalities create a gap between social and private rates of return on investments and therefore become a central justification for jobs investment projects.

Even if policy makers succeed in tackling other factors that undermine firms' private investment returns, the private sector still might not invest enough; or it might not generate the optimal portfolio of investments, from the point of view of jobs outcomes⁵. Private investments that would be socially efficient – in part because of the number and types of jobs they create – do not take place. Instead, an economy can see “too much” capital going into investments that are less efficient for society, from a jobs perspective. For this reason, policies to support private sector development should also be informed by metrics about the externalities that are directly related to jobs. This is particularly important when there are also learning spillovers⁶ and coordination failures,⁷ which can further amplify the gap between social and private rates of return that emerge when jobs-related externalities are taken into account.

The goal of this Note is to establish guidelines for the economic analysis of jobs investment lending operations that take these issues into account. The Note should be read in conjunction with the World Bank's Economic Analysis Guidance Note, published in 2014 by OPCS (OPCS 2014), which details the Bank's general requirements for economic analysis of investment projects under the revised OP-BP 10.00.⁸ The general framework of the guidance in OPCS 2014 remains fully relevant.⁹ However, OPCS 2014 also indicates that practice groups in the Bank will develop sector-specific notes as necessary.¹⁰ In that context, the present Note

⁴ This has led to IDA 18 donors focusing explicitly on the importance of promoting jobs transformations, not just growth (The World Bank, 2016).

⁵ For a discussion of the importance of firms in economic development, see The Economist (2017a).

⁶ Investments on new technologies and products can push the technological frontier forward and facilitate future innovation. They also can increase firms' “absorptive capacity;” their ability to assimilate knowledge from their environment and therefore identify further opportunities for investment and job creation (see Aghion and Jaravel, 2015).

⁷ Coordination failures emerge when economic agents are unable achieve coordination among complementary activities. Coordination failures can lead the market to an outcome inferior relative to a potential situation where resources would be allocated efficiently. Jobs social externalities can amplify coordination failures (see, for instance, Glavan 2007).

⁸ See also the comprehensive treatment of cost benefit analysis for investment projects in Belli et al (2001).

⁹ The starting point is to develop a detailed understanding of the project and its developmental logic. The analysis needs to state the expected Project Development Impact (PDI); to show the justification for a public intervention; and to make the case for the specific value added expected from World Bank involvement in the proposed project (OPCS, Section 1, Para 1). The economic analysis then needs to show that the social rate of return of the project is above the policy benchmark rate of return; that there are no lower cost alternatives; and that the project is financially, socially and environmentally sustainable. It also needs to demonstrate that the cost of the project will not undermine fiscal sustainability.

¹⁰ Annex B of OPCS (2014) provides links to documents that outline appropriate approaches for a variety of sectors, including agriculture, infrastructure, transport, health, education, social funds, social protection, environment and water projects.

provides additional guidance on the Bank's expectations for project economic analysis in investment lending operations whose explicit aim is to improve jobs outcomes.

The remainder of this note is organized in two main sections. Section 2 discusses how the principles of cost benefit analysis (CBA) should be applied when job creation or productivity and earnings improvement is a desired outcome of the project. Section 2.a introduces the main concepts of CBA and Section 2.b presents key elements for the appraisal of jobs investment projects. Section 3 then discusses issues that will need to be considered depending on the type of interventions, distinguishing between "supply-side" jobs interventions (those that focus on training workers and improving their labor market insertion) and innovative "demand side" interventions (those that focus on enhancing firms' demand for labor). Section 4 concludes.

2. THE PRINCIPLES OF ECONOMIC ANALYSIS OF JOBS INVESTMENT PROJECTS

The general goal of the Cost Benefit Analysis (CBA) is to improve microeconomic allocative efficiency by correcting for market failures. The focus is on identifying projects which are not privately profitable, but which might be socially profitable and thus merit public support. The reason why social and private profitability might diverge is that private agents respond to market prices, which can be distorted by market failures of different sorts. For example, the prices of inputs might not be fully reflective of economic opportunity cost and market revenues may understate or overstate the full social benefit of the project or activity.

The analytical paradigm for CBA builds out from a financial analysis of the project, which computes an internal rate of return based on the projected net cash flow. CBA then adjusts the financial rate of return to generate an estimate of the social rate of return (SRR)¹¹. It first adjusts the project's financial costs to reflect social opportunity costs of the inputs, and it then incorporates a full measure of the social benefits or costs that are not captured or paid by private investors.

If these adjustments lead to an SRR which is above a reference benchmark rate, then public policy would support its implementation, even if it is not privately profitable. The benchmark rate should reflect the economic opportunity cost of capital, consistent with the economy's macroeconomic constraints. It is usually set in the range 10% to 12%. The economic analysis also needs to show that the project is using the least-cost option to generate the identified benefit stream (because otherwise the SRR could be increased by shifting to that option). Public support will normally take the form of corrective subsidies (either in cash or through facilitation activities) or taxes.

This first step towards estimating the SRR is therefore to adjust the project's financial costs using shadow prices that reflect *social opportunity costs*. Typically, all transfer payments, such as indirect taxes and subsidies (which do not reflect a direct use of productive inputs), are stripped out. If the project uses imported components and the exchange rate is not competitively determined, import costs may be adjusted to reflect the full opportunity cost of the foreign exchange used to acquire them.

This process also includes adjusting the labor costs of the project, to reflect the social opportunity cost of the labor. This includes removing taxes and transfers from the market cost of labor. It also factors in the level of un- and under-employment, by estimating the probability that the worker would otherwise have been employed in alternative activities and what their productivity and earnings would have been.

Adjustments are also needed on the benefit side of the calculation. In place of the revenue stream from the sale of the project's outputs (that appears in the financial analysis), CBA estimates a benefit stream that also takes account of the social benefits or costs arising from externalities (positive or negative) and adds consumer surplus to market revenues to get a full statement of *willingness to pay*.

The full social benefit stream should preferably be estimated based on revealed preference data (where available) that allow the demand curve to be identified. Alternatively, "stated preference" techniques (such as willingness to pay surveys) can be used to compute the economic benefit of the project, including the

¹¹ In this paper we use SRR throughout to mean the fully adjusted economic return to society of a given activity, incorporating appropriate corrections for market failures (including shadow prices and externalities of all sorts). The term Economic Rate of Return (ERR) can be used interchangeably with the term Social Rate of Return (SRR).

value of social preferences for improved public goods, such as environmental outcomes¹². Much of the literature on economic analysis is concerned with the conceptualization and measurement of the full social benefits for particular types of projects.

APPLYING THE CBA FRAMEWORK TO JOBS INVESTMENT PROJECTS

In this section we discuss the application of the CBA framework to analyzing the social rate of return (SRR) of jobs investment projects. Such projects aim to increase the number of sustainable jobs, improve the quality of existing jobs, and/or improve labor market labor outcomes (e.g., employment rates, earnings) for workers, compared with the counterfactual situation that would exist “without the project”. They do so by addressing market and government failures that lead to sub-optimal jobs outcomes.

The starting point is to estimate the financial rate of return (FRR) of the jobs investment project¹³, which is given by:

$$(1) \text{NPV}[Q(t), -w(t)L(t), -I(t), -CI(t); \text{FRR}] = 0$$

Where: $Q(t)$ is the flow of revenue generated by selling the output of the project at market prices over time¹⁴, $w(t)L(t)$ are labor costs through time¹⁵, $I(t)$ is the cost through time of the capital investments, and $CI(t)$ represents all other costs including intermediate consumption and any other operational costs, including the costs of obtaining information and coordinating the actions of different agents. The FRR is then equivalent to the discount rate which equates the present value of the revenue flow $Q(t)$ with the present value of the sum of the cost stream.

Adjusting for the opportunity cost of labor. The first challenge is to account properly for the economic opportunity cost of labor (EOCL). When an economy is at full employment and labor markets are competitive, $w(t)L(t)$ is a good measure of the opportunity cost of labor. But when un- or under-employment rates are high the opportunity cost of labor is lower, because if the project was not implemented, then the labor would be underutilised.

Most LICs suffer from considerable structural unemployment (or under-employment). Even when economic activity is close to the maximum level of demand growth that is compatible with macroeconomic stability (a stable, non-accelerating inflation rate), there is under utilized labor¹⁶. This is reflected in a high value for the “NAIRU”, or “Non-Accelerating Inflation Rate of Unemployment”. In this case, the lack of demand for labor partly reflects distorted factor prices: the market price of labor is above the economic opportunity cost, possibly linked to segmented labor markets¹⁷.

A key argument of this Note is that divergences between the market cost and the shadow price of labor can be central to the economic rationale of projects to stimulate job creation in the private sector in LIC settings. Just as shadow price adjustments for labor costs are an important step the economic appraisal of

¹² In the case of externalities linked to public goods, it is not possible to observe market demand, because by definition they are not traded.

¹³ The project might be a private investment project; a publicly funded training project; an infrastructure project or some combination of all of them.

¹⁴ This can also be stated as: $v.L$, where v is the average labour productivity for the investment project and L is the number of jobs on the project.

¹⁵ There will normally be different types of labor with different wages, but the essence of the calculation is the same: the total costs of labor is equal to the average wage times the total number of workers.

¹⁶ The structural deficiency of labor demand is not necessarily reflected in open unemployment. Where there is no welfare system, it is often reflected in high levels of underemployment: low productivity jobs in informal self employment. It is also sometimes manifest in low labor force participation (LFP) rates for the classes of worker that find it hardest to find productive jobs, such as the so-called NEETs: youth who are “Not in Employment, Education or Training”; and rural women.

¹⁷ In contrast, when unemployment is cyclical, the appropriate policy response is a macroeconomic correction.

infrastructure or social sector investments, they should also be central to the economic evaluation of investment projects whose explicit focus is on stimulating private sector investment and jobs growth.¹⁸

Where the market wage and the shadow wage diverge, the SRR can be defined as:

$$(2) \text{ NPV}[Q(t), -w(t)L(t)(1-u)(1-s), -I(t), -CI(t); \text{SRR}] = 0$$

where the new parameters are u , the average unemployment rate, and s (a measure of underemployment) captures the difference in earnings among those who (in the absence of the project) would have been working part time, or in lower productivity activities. This adjustment internalizes to the estimation of the SRR the private gains of the workers who get improved jobs. Where the shadow wage is equal to the new wage, that gain is zero and so there is no adjustment to make.

In making this adjustment, it is important to track different types of labor with different wages and shadow wages (reflecting different unemployment and underemployment rates). Good practice is to find labor market data as close as possible to the type(s) of labor, economic sector(s) and region(s) where the project will be located.

Technically, there are two approaches to estimating the economic opportunity cost of labor: (a) estimating the marginal product foregone as a result of shifting labor into a given project; or (b) estimating the supply price of labor in the relevant market (which is distinct from the gross wage actually paid in a given project or business). The two approaches should lead to consistent estimates and the choice of which to use normally depends on data availability issues. A detailed discussion of technical aspects of estimating the EOCL can be found in Jenkins, Kuo and Harberger (2011).

Accounting for indirect and induced jobs. The next step is to take into account the value of indirect and induced jobs. *Indirect jobs* are those created by the production of inputs or downstream value chain transformations that are triggered by the main investment. For example, if an agribusiness company expands its activities by incorporating outgrowers through an aggregator scheme, the improved jobs of the smallholder contract farmers are indirect jobs, from the point of view of the agribusiness investor. *Induced jobs* are created as a result of an increase in demand, when the earnings from the wages and profits in the main investment are re-spent (including local economy multiplier effects). They can also result when investments in infrastructure open up profitable opportunities in industries that can use the infrastructure.

The SRR would then be defined as:

$$(3) \text{ NPV}[Q(t), -w(t)L(t)(1-u)(1-s), -I(t), -CI(t), + w'(t)L'(t)(1-u')(1-s'); \text{SRR}] = 0$$

where L' are the indirectly created and/or induced jobs, w' are the wages associated with those jobs and u' and s' the unemployment rate and share of full time employment among the workers who access those jobs (since the net benefit from the additional indirect or induced jobs needs to be adjusted downwards to reflect the economic opportunity cost of that labor).

Estimating the extent of indirect and induced jobs is not straightforward and in many cases a full estimation might not be possible. Nevertheless, reasonable approximations can often be made. For example, value chain surveys are a good approach to determining the indirect jobs linked to the expansion of demand for a given agricultural crop and its downstream derivatives.

Similarly, when infrastructure improvements are made, it may be possible to measure the increase in economic activity in the surrounding area, estimate the induced jobs, and compare that with what happens

¹⁸ The importance of capital investment in LICs to absorbing labor from the undercapitalized, low productivity informal sector into the modern sector of the economy is discussed by Loewenstein and Bender (2017). They develop a dual economy model that shows that large sustained differences can exist between the level of earnings in the two sectors, so that the shift of labor into the modern sector will generate major gains for the workers.

in other similar areas which remain unserved. However, these approaches are exposed to the risk that the indirect and induced jobs might replace jobs elsewhere in the economy.

Well known approaches to estimating indirect and induced jobs include the use of Input-Output (I-O) tables or Computable General Equilibrium (CGE) models. I-O tables provide a basis for estimating the (direct and indirect) capital and labor requirements of investments in a given sector, based on the existing parameters observed in the economy. However, they do not provide a basis to estimate induced jobs, linked to demand multiplier effects. Nor can they compute possible reductions in output and jobs elsewhere in the economy, due to the reallocation of resources towards the supported project. CGE estimates can help to address both these issues, but CGE analysis is highly sensitive to assumptions about the structure and parameters of the model, and sizable effects are only likely to appear when modeling large scale investments.¹⁹

Accounting for social externalities linked to jobs. The third step is to quantify the benefits linked to jobs that are not captured either by employers/firms or by their workers. Policy makers are increasingly interested in the social externalities that arise from *particular classes of people* getting better jobs. This issue was flagged in the 2013 Jobs World Development Report, where jobs that enhance social cohesion were cited as an example of “good jobs for development” (World Bank, 2013, page 20).

Such externalities are likely to be particularly important in countries and communities that face high levels of fragility and exclusion. If there is a social preference for eliminating poverty, policy makers might value jobs and incomes for *poor people* above the market value. Similarly, in settings where there are risks of youth drifting into gangs and violence or into political radicalization, jobs for *young men* may help to reinforce social cohesion. Youth who have a job also learn-by-doing building human capital and making other workers more productive. Finally, where there are problems of gender imbalance, or human development challenges for young children linked to large family sizes and lack of household investment in child development, the creation of jobs for *young women* may help to empower women, to reduce teen pregnancy, to lower fecundity and to increase household investments in children’s development (due to the effect of female control of income on the household’s preference function).

Formally, these benefits can be expressed as a share b of wages (earnings) and the SRR can be defined as:

$$(4) \text{ NPV}[Q(t), -w(t)L(t)(1-u)(1-s), -I(t), -CI(t), + w'(t)L'(t)(1-u')(1-s'), +b*w(t)L(t); \text{SRR}] = 0$$

where b captures the value of social externalities expressed as a share of the earnings.²⁰

While it is easy to think of reasons why externalities of these sorts might arise, it is less easy to operationalize them and define a value for b . One option (quite often followed by project appraisal teams) is to construct complex models with specific assumptions about the causal links from having a job to the desired outcomes (reduced poverty, reduced crime and violence, improved childhood development indicators) and then to seek

¹⁹ For a discussion of the use of CGE models in the analysis of jobs investment projects, see Mohamed Marouani and David Robalino, "A General Equilibrium Model to Assess Jobs Impacts: Theory and Applications." Forthcoming. IZA Working Paper Series.

²⁰ The idea that there may be social benefits from jobs challenges received wisdom in Cost Benefit Analysis. For example, the following is a citation from a list of “common pitfalls in cost benefit analysis” which appears in the IADB’s Website guidance on Cost Benefit Analysis: “Some projects have an explicit – or implicit – goal of providing employment (but) in all cases employment is a cost, not a benefit as it entails the use of a scarce resource. In those cases where employment is pursued, an appropriate shadow wage rate should be used to reflect the real opportunity cost of labor.” In contrast, the position taken by the present Note is that jobs are BOTH a cost AND a benefit; and sometimes, part of the benefit is an externality that accrues to society at large and not just to the workers who get the jobs. This calls for adjustments on both sides of the CBA computation: on the *cost side*, to make sure that the opportunity cost of jobs is not overstated; and on the *benefit side*, to make sure that the benefit stream from the jobs is not understated.

<http://www.iadb.org/en/topics/development-effectiveness/evaluation-hub/economic-analysis-overview,17878.html>.

an empirical basis for estimating parameters for the value of such changes from the available literature or from evaluation studies commissioned for the project.²¹

An alternative approach is to set the value of b as a policy choice. CBA can then use sensitivity analysis to find the value of b that would be required to raise the SRR for a project above a given threshold. This approach has long been used in the analysis of policy choices for poverty reduction, where a Beta weight is applied to reflect a preference for outcomes that benefit poor households.

Another approach is to measure the preferences of the relevant population towards the creation of jobs for particular groups of beneficiaries. Such preferences are a public good which can't be observed through revealed preference techniques, because it is not traded in a market. But it can be estimated using stated preference (contingent valuation) techniques. The use of stated preferences for the evaluation of externalities in CBA is well established in the evaluation of environmental projects. One example of this approach are *Willingness to Pay Surveys*, where a representative sample of the population is asked about their willingness to pay by enquiring if they would vote in favor of paying a given amount of tax to fund a particular outcome, such as more jobs for young people²². Another approach is the use of *Discrete Choice Experiments*, where the population's preferences for the outcome of interest can be imputed from the analysis of participants' repeated choices between alternative bundles of outcomes. This approach was recently used in the CBA for a Jobs investment project in West Bank and Palestine (see section 3.b below).

Accounting for externalities linked to learning or knowledge spillovers. The output flows reflected in the FRR might not capture the benefits emerging from "learning by doing". If an investor cannot fully capture the returns from discovery and coordination costs (because they accrue to other actors through learning spillovers), there is a "free rider" problem that reduces the incentive to make private investments that expand the production possibility frontier of the economy. That can result in a sub-optimal equilibrium level of output, compromising job creation and productivity growth (Stiglitz, J. and Bruce Greenwald, 2014).

Although this type of externality is not specific to jobs projects, it is often an important factor among the market failures constraining jobs-enhancing investments. To capture this possibility, it is possible to adjust $Q(t)$ by a factor k that approximates the potential increase in economy wide, labor productivity that would become possible as the innovations diffuse through the economy (Stiglitz, op.cit.). Formally, the SRR is then defined by:

$$(5) \text{ NPV}[k.Q(t), -w(t)L(t)(1-u)(1-s), -I(t), -CI(t), + w'(t)L'(t)(1-u')(1-s'), +b*w(t)L(t); \text{SRR}]=0$$

Once again, the empirical problem facing the evaluation team will be to find a robust base for making such estimates *ex ante*. Unlike in the case of social cohesion externalities (where it is empirically feasible to measure the preferences of the population), in the case of growth spillovers the externality is likely to be an "unknown known". That is, the concept is clear and it is highly likely to exist in relation to some investments, but it is difficult estimate. For this reason it is not in general recommendable to rely on the possible existence of such effects for the *ex-ante* justification of a jobs investment project.

²¹ A good example of this sort of construction of benefits estimates can be found in (Galasso, E., A. Wagstaff, S. Nadeau and M. Sheekar, 2017), which analyses the benefits from nutrition programs..

²² This type of formulation of Willingness to Pay survey questions is sometimes called the "referendum method".

3. PRACTICAL APPLICATIONS OF COST BENEFIT ANALYSIS FOR JOBS PROJECTS

Building on the theoretical framework of Section 2, this section outlines some practical approaches to the economic evaluation of different types of jobs investment projects. There are two broad categories of jobs investment projects: (a) *supply side interventions*, essentially *active labor market programs* that aim to improve the quality of labor through education and training and facilitate labor transitions (from inactivity or unemployment into employment or from low to higher quality jobs); and (b) *demand side interventions* that aim to promote job creation or improve the quality of existing jobs (productivity and working conditions) at the firm level. Some projects include both types of interventions and deliberately seek to generate synergies between them.

(a) Supply side programs. Active Labor Market Programs (ALMP), including training programs, aim to address market and government failures that reduce the level or quality of human capital and create mismatches between the labor supply and demand. In general, the market failures are related to information asymmetries; constraints to labor mobility; firms' inability to capture in full the returns to their investments in training; capital and behavioral constraints that distort households' and individuals' investment in education, and deficiencies in the education system.

ALMPs include counseling, diverse types of skills training (technical, soft-skills), support for labor market intermediation (job-search assistance, transport subsidies and wage subsidies for first time job seekers). They are often targeted on a specific beneficiary population, so it is conceptually easy to define the counterfactual: what would have happened to the beneficiaries in the absence of the project intervention (e.g. if they had received no training or jobs search assistance).

The economic appraisal of such projects usually computes the benefit stream in the form of the projected increased future earnings of the workers. The main difference with the general methodology described in Section 2 is that in this approach, the benefit stream is limited to incremental earnings, so there is no attempt to track the full incremental value added $Q(t)$ linked to the jobs created by the intervention.²³ The SRR in this case can be defined by:

$$(6) \text{ NPV}[\{w(t)-w_0(t)\}L(t)\{u_0-u\}^*(1+b), -I(t), -CI(t); \text{SRR}] = 0$$

The benefits are given by additional net earnings adjusted by the value of any social externalities related to the new jobs. The unemployment rate can be replaced by a more general measure of employment that also takes into account inactivity and hours of work (Kluve et al, 2016).

The most important challenge is estimating the earnings for unemployed people who get jobs, or changes in earnings for those who change their skills level. This approach is conceptually consistent with mainstream approaches to evaluating education projects, where Mincerian regressions are run on cross sectional labor force datasets to project the impact of additional years of schooling on future earnings while controlling for other observable independent variables (Belli, 2001, chapter 8). However, using cross sectional labor force survey data to predict earnings, conditional on employment; or to predict changes in earnings, conditional on training can be misleading, due to "unobserved heterogeneity". That is, some unobserved characteristics

²³ The rationale is that a "supply side" intervention will normally improve the quality and allocation of the labor supply but it will not trigger the increased capital investment needed to increase productive capacity.

of individuals may partly explain their current status (being unemployed or having a lower level of education), and may also directly affect their future earnings opportunities. These problems can be addressed by statistical techniques to control for selection, which have been adopted widely in this type of analysis. Box 1 (below) discusses the findings from two important reviews of the evaluated impacts of supply side jobs projects.

(b) Demand side interventions to increase the number and/or quality of jobs. This is the area where many of the recent innovations around jobs have been happening and where there is greater complexity on conceptualizing and measuring the benefits.

Demand side interventions can work directly through firm-level interventions, including both those that promote the creation of new firms and those that support the expansion of existing firms and improve their competitiveness. In the past, interventions to promote firm development - such as business support services and support for access to financial services (SMEs) – have often not been focused explicitly on jobs. But more recently, there have been new initiatives which seek to correct market failures that are directly linked to jobs. These interventions include subsidies and capital grants to businesses that seek to correct for market failures and internalize the externalities that are linked to job creation. This also includes value chain projects that aim to link smallholder farmers to anchor buyers to improve their productivity and earnings.

Box 1: Findings from rigorous evaluations of supply side jobs projects

Several recent rigorous evaluations have shown that even among successful programs, differences in earnings and/or employment indicators between treatment and control groups are usually small. For example, Kluve et al (2016) conducted a meta-analysis of the evidence from rigorous evaluations of 113 youth employment programs in developing countries and found evidence of positive impacts in only 30% of cases; and that the observed impacts were generally modest in scale. However, the study also shows that programs which integrate multiple interventions are more likely to succeed; that careful profiling and follow-up systems help to improve program performance; and that well designed incentive systems for services providers can make a difference to outcomes ²⁴.

Similarly, McKenzie (2017) reviews 24 recent rigorous studies of ALMPs made using RCT methodologies and finds that the median impact on the probability of getting a job is two percentage points (of every 100 trainees only two get jobs they wouldn't otherwise have got)²⁵. Even this finding is challenged by the high rate of attrition in study participation (averaging 18%) and by the difficulty of controlling for general equilibrium effects (i.e. being sure that the beneficiaries who get new jobs aren't just crowding out someone else who didn't get training, without any additional jobs being created). Nevertheless, McKenzie concludes that the modest measured returns for ALMPs are similar to those for education in general (which are based on computing skill premia from labor market datasets using Mincerian regressions). For low cost programs, such as screening and matching, even small impacts may generate an acceptable SRR.

Demand side interventions can also work through infrastructure investments that shift production possibilities by improving connectivity or eliminating bottlenecks in given regions and sectors. Private investors might not be able to internalize these network and social externalities, so in the absence of public investment, infrastructure might be underdeveloped. If infrastructure facilitates increased output in firms that use it, the production possibility frontier of the economy shifts outwards: there is potential to create

²⁴ Kluve, J. et al. (2016).

²⁵ McKenzie, David. (2017)

more jobs or increase the productivity of existing jobs. If so, the estimation of the social rate of return of infrastructure investments should include the benefits associated with the direct and indirect jobs created.²⁶

The specifics of demand-side jobs projects can vary greatly, but the principles of the economic analysis remain similar. On the benefit side, the analysis should first compute the estimated number of new jobs that will be supported. The basis for such computation *ex-ante* would be the projected job creation effects estimated in the project appraisal. *Ex-post* this should be replaced with real data for the jobs created by the project, preferably based on a rigorous evaluation that compares the intervention group with a valid control group. Modelling the benefit stream then focuses on the expected increases in the workers' earnings (compared with the shadow wage) and the social externalities (when the improved jobs go to priority social groups).

The following paragraphs provide examples of approaches to the evaluation of demand-side jobs interventions.

- ***Subsidies or capital grants to private investors, based on the projected gains from their job creation effects.*** This type of project provides a package of support (often including both financial support and technical assistance) to catalyze the expansion of business activity that will generate better jobs outcomes on a sustainable basis. Usually, applicant firms are required to submit business expansion plans that specify the investment amounts and the projected job creation effects. The project analyzes the business proposal to ensure that it is robust and allocates matching grant financing and other forms of support, as appropriate, which is dimensioned based on the projected gains from the jobs impacts. The project design sometimes seeks to limit the amount of subsidy to the amount needed to make the investment viable (feasibility gap financing) and incorporates a credible methodology to link disbursements of the subsidy to the implementation of the investments that increase the firm's demand for labor. This approach is used, for example, by the South Africa Jobs Fund (www.jobsfund.org.za). A similar approach was used in a large-scale business plan competition in Nigeria, which was shown in a rigorous evaluation to have clear, positive job creation impacts (McKenzie, 2015).²⁷ In such projects, the resulting jobs might be direct jobs in the applicant firm or they may be indirect jobs for farmers who will supply inputs (as in the case of aggregator firms in agribusiness). The CBA should be based on the number of additional jobs to be supported by the project and the estimation of private and public benefits linked to them. That is, the private gains for the workers (direct or indirect) based on their projected improved earnings; and the gain associated with social externalities, if appropriate. The *ex-ante* economic analysis can be based on the project's financial projections. The *ex-post* analysis should validate the impact on jobs and earnings using robust measurement techniques, including appropriate controls or comparison groups. It should also validate the sustainability of the additional jobs, based on the financial analysis to show that the jobs will continue to be sustainable based on the firms' projected cost and revenue streams.
- ***Subsidies for improving infrastructure.*** Subsidies can be linked to the projected number of jobs to be created in a region or industrial park, once infrastructure or financial services are improved; and sensitivity analysis can be done around the central projection. An example is the World Bank's *West Bank and Gaza Finance for Jobs (F4J) project*, approved in 2017, which includes an Investment Co-financing

²⁶ The economic analysis of infrastructure projects usually takes a more conservative position, computing the benefit based only on the increased infrastructure services consumed. Implicit in this approach is the idea that the other resources (labor and capital) used in the new industries, would otherwise have been reallocated elsewhere in the economy at similar rates of return. However, land (which forms part of the capital used in any project) cannot be spatially reallocated; and limitations to labor mobility often make it unlikely that labor would be efficiently reallocated elsewhere if the project did not go ahead. See Box 2, below for further discussion of this issue.

²⁷ McKenzie, David (2015) "Identifying and Spurring High-Growth Entrepreneurship: Experimental Evidence from a Business Plan Competition", World Bank Policy Research Working Paper no. 7391

Facility offering matching grants up to 20% of the capital investment. In the first phase of the project, the facility will support a private solar power investment to facilitate the expansion of output and employment in factories in the Gaza Industrial Estate (GIE). The justification for the public intervention is that the high risk of the FCV environment makes the solar power investment economically unviable without a public equity contribution (which effectively shares the risk). The economic appraisal shows that on reasonable assumptions, the investment will generate benefits for workers through the creation of induced jobs in the factories located in the park, equal to the difference between the wages to be earned and their current (without project) earnings. The latter were computed based on the probability of employment; and of wage levels, conditional on employment, prevalent in the local labor market. In addition there is a *social externality* associated with the generation of jobs for young people, which was quantified using an innovative *Discrete Choice Experiment* to determine the willingness to pay of the WBG population for reduced youth unemployment. The analysis concluded that the estimated sum of the public and private benefits is sufficient to justify the subsidy needed to make the development of the solar power plant feasible for the private investors. The subsidy will be limited to the amount needed to raise the projected rate of return above the risk-adjusted cost of capital (a variant of feasibility gap financing).

Box 2 – measuring the jobs and growth effects of road infrastructure projects

When infrastructure projects increase the potential for economic growth in the region(s) served, the standard estimation will likely underestimate the returns to the project. Take the case of a road infrastructure project. Road projects are normally evaluated using a sector-specific instruments, the Bank's HDM and Roads Economic Decision Model²⁸. The benefit stream is conceptualized in terms of the impact of reduced travel costs on the volume of journeys. Cost reductions include savings in travel time and reduced operation and maintenance cost for vehicles due to having a better quality road.

This can be thought of as a downwards shift in the supply curve for journeys: any given number trips now has a lower cost than before. This should produce an increase in traffic volume, up to the point where the cost of the marginal journey is equal to the benefit from the marginal trip. The associated gain to users can be thought of as a "Harberger Triangle"²⁹ of additional consumer surplus, which lies below the demand curve for travel, in the range bounded by the original equilibrium cost of a journey and the new (lower) equilibrium cost. In this analysis the shift in the supply curve is the sole source of economic benefits from the project; the demand curve remains unchanged.

However, the project may open up possibilities for greater economic development in the area around the road, due to improved market linkages. That would produce additional benefits that are not captured by the approach described above. If new jobs are created, the value of the (net) income stream associated with the resulting jobs should be computed as an externality, additional to the benefits that are internal to the road project itself. If the new jobs are for priority groups, the social externality should also be computed, as laid out in section 2.b, above. Finally, the local economic development impact is also likely to lead to a rightwards shift of the demand curve for journeys, so that the final increase in consumer surplus attributable to the project itself will be greater than the first round of supply-side effects.

(c) Addressing multiple market failures can generate additional synergies. Sometimes, economic analysis might identify several constraints that need to be addressed to generate better jobs outcomes in a given sector or region. If so an integrated jobs project might include components addressing more than one market

²⁸ For detailed information on the HDM model see: <https://openknowledge.worldbank.org/handle/10986/17419>

²⁹ Named after Arnold Harberger, who came up with the idea.

failure. In recognition of this, the WBG has developed *spatially focused interventions* that package several jobs-relevant interventions. An example is the Tunisia PRODUCTIVE INCLUSION OPPORTUNITIES FOR YOUNG WOMEN AND MEN Project³⁰, which combines ALMP activities with enterprise support and infrastructure interventions relevant to high potential value chains in regions with large jobs challenges.

The Bank has also promoted “Landscapes” projects in the agricultural sector and “Growth Poles” projects led by the Trade and Competitiveness Global Practice, which seek to release constraints to firm growth and job creation in specific regions through multiple interventions. These can include actions to improve collective governance and the provision of financial and other forms of support for investments that will generate growth and jobs.

When appraising such projects, the “theory of change” underlying the project is that future employment and earnings will increase because the investment in human capital, in firms’ capital or in public infrastructure is greater than it would be if the underlying externalities and other market failures were not compensated through a public policy. The project economic analysis then needs to quantify the resulting benefits.

³⁰ Report No: PAD2221

4. CONCLUSION

This Note systematizes approaches to the economic evaluation of Jobs Investment Projects. It explains the limitations of past programs and projects that have regarded jobs only as a by-product of growth. This resulted in a focus on increasing investments by addressing market and government failures through macro and regulatory policies and sometimes through investment projects. However, this paradigm failed to take into account the full set of market failures that are important for the jobs agenda. These include: labor externalities that arise from the divergence between the market price and opportunity cost of labor in economies with segmented labor markets; the existence of social jobs externalities, linked to social and policy preferences for improved jobs outcomes for specific categories of individual (such as youth, women, and the extreme poor); the existence of learning spillovers; and the impact of coordination failures, such as those that constrain infrastructure development.

These market failures create a gap between the social and private rate of return on investments and reduce the creation of good jobs. The “Growth Diagnostics” approach addresses part of this agenda – including spillovers and coordination failures – but it lacks a specific focus on jobs, especially jobs-linked externalities.

This Note suggests a more complete framework and argues that new types of intervention are needed to address the market failures directly linked to jobs. It integrates the analysis within a Cost Benefit Analysis framework that will facilitate decision making around investment programs. Finally, the Note discusses in detail the economic concepts relevant to the evaluation of different sorts of jobs investment projects: those that focus on improving the quality of labor supply and labor market matches; those that focus on strengthening firms’ demand for labor; and integrated projects that include both types of intervention.

Jobs investment projects are an evolving field, especially on the demand side, and practitioners are working on the challenges of improving their design. That includes finding ways to maximize the jobs impacts of the available public resources. Designs that build in market mechanisms, such as bidding on the amount of subsidy per job created, are a promising approach. Another challenge is develop project rules that minimize the risk of subsidising investments that would have been made anyway.

A related challenge is to minimize the risk that the expansion of jobs in firms supported by the project might “crowd out” jobs elsewhere in the economy, with no positive impact on the general equilibrium level of economic activity. This underlines the importance of a careful ex-ante analysis of the market failures being addressed by a given project, to show that increased net output is a plausible result of the intervention. A necessary (but not sufficient) condition is likely to be that the beneficiary firm increases its productive capacity. It is also crucial to evaluate the sustainability of jobs, once the project’s support has ended. For these reasons, successful jobs investment projects will likely incorporate a detailed appraisal of candidate firms’ expansion plans, including sensitivity analysis to show that the jobs are likely to be sustained under reasonable assumptions.

As practitioners advance in addressing these challenges, the analytical tools for the economic appraisal of jobs investment projects will evolve too. But the basic principles laid out in this Note will remain central to the evaluation of the World Bank Group’s support to the jobs agenda.

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