Addressing Jobs Externalities in Dualistic Economies: Cost Benefit Analysis Principles and Applications

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Presentation at Jobs Core Course, October 2019
1. Motivation
Growth diagnostics

- Capital market failures / cost of capital
- Market failures lowering IRR of projects (goods, labor, land markets)
- Appropriation of returns / market governance
Jobs Diagnostics show weak correlation from GDP growth to employment growth.
Employment tends to grow in line with labor force growth....
...the problem is JOB QUALITY

- Formal Wage Employment, 15%
- Informal Wage Employment, 20%
- Self Employment, 65%
2. Lending for jobs, rather than growth
Why is so much labor trapped in bad jobs?

- **Neoclassical theory**: workers move between jobs until the Marginal Product of Labor is equated across occupations.

- **Structural dualism**: separation of traditional and modern sectors in developing economies can lead to large earnings differences, with no tendency for marginal returns to be equated between the two sectors (Lewis, 1954).

- This produces significant **jobs-linked externalities** around the creation of better jobs: so firms' investment in job-enhancing projects will be socially sub optimal.
We need a new generation of jobs projects

- Better jobs with higher productivity and earnings are key to development in IDA countries
- Jobs-linked externalities are a market failure that has not been addressed in the private sector growth agenda
- We need Jobs Projects to address them.....
- .... so we also need a conceptual framework to compute their social rate of return
Two types of Jobs Linked Externality

- **Labor Externality**
  - Difference between wage and economic opportunity cost of labor (EOCL)
  - Private gain for the workers who get the better jobs (direct or indirect e.g. in supply chains)

- **Social Externality**
  - The value to society of better outcomes for groups such as: youth, women, extreme poor
  - A “multiplier” of the private gain; it only exists if there’s also a labor externality and/or jobs are redistributed to the preferred groups
Internalizing Jobs-Linked Externalities

Social Externalities

Social Value of Job > Financial Value

Labor Externalities

SRR >> PRR
Social Private

POLICY SPACE:
RE-ASSESS MACRO/REGULATORY & LABOR POLICIES

Policy-based lending (DPO)
• Fiscal/monetary policy
• Trade policy
• Competitiveness
• Labor regulations
• Labor taxation

PROJECT SPACE:
CROWD-IN PRIVATE INVESTMENTS TO CREATE BETTER QUALITY JOBS

Investment Project Lending
• Subsidies to correct Jobs Linked Externalities (JLEs)
• VC Development
• Aggregator programs
• SME Development
• Entrepreneurship
• Economic Inclusion
• Training / ALMPs
• Infrastructure

Market Price of Labor > Social Opportunity Cost
Focus on internalizing Jobs-Linked Externalities

- Improve design of supply-side (training and intermediation) interventions
- Integrate with demand-side interventions to increase the number of good jobs (formal or informal) linked to modern sector, that workers in the traditional economy can access
Measuring jobs-linked externalities

- **Labor externalities:**
  - Two approaches to measurement of Economic Opportunity Cost of Labor: (a) supply price of labor and (b) direct measurement (treatment and control) (Jenkins, Harberger et al, 2017)

- **Social externalities:**
  - Piecemeal calculations (e.g. of women’s jobs impacts on their children’s nutritional status and future earnings)
  - Stated preference techniques (Willingness To Pay surveys, Discrete Choice surveys)
  - Policy parameter (e.g. Atkinson’s approach to pro-poor policies)
Designing Jobs Investment Projects: key points

- Better jobs often require **investment in both plant and human capital** - there’s no point just fixing one of the problems.

- We may need to **integrate labor supply and labor demand interventions** – addressing joint “binding constraints” e.g. in backwards regions.

- **Firms are key actors** and market linkages are crucial: we normally can’t “fix” these problems within the household economies of the traditional sector. We need firms with real market potential.

- We can **kill two birds with one stone** – e.g. subsidies can both correct JLEs and offset firms’ capital market constraints (by increasing equity).

- **Fiscal efficiency:** We should aim to “discover” the minimum necessary subsidy to trigger an investment (principle of *Maximizing Finance for Development*).

- **Sustainability:** Projects can “kick start” investments, which will be privately profitable, once established, using a limited package of grants and TA; or an infrastructure investment.
Let’s check your knowledge!

Click on

pollev.com/jromero509
What worker has the highest formal sector wage?

**Answer: A**

<table>
<thead>
<tr>
<th>NEPAL FORMAL SECTOR WAGES:</th>
<th>Total</th>
<th>Male</th>
<th>Female</th>
<th>Male (urban)</th>
<th>Female (urban)</th>
<th>Male (rural)</th>
<th>Female (rural)</th>
<th>Youth (total)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture with small firm</td>
<td>960</td>
<td>1,200</td>
<td>546</td>
<td>1,389</td>
<td>677</td>
<td>1,126</td>
<td>513</td>
<td>870</td>
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<td>Manufacturing with small firm</td>
<td>1,475</td>
<td>1,505</td>
<td>982</td>
<td>1464 (B)</td>
<td>1,072</td>
<td>1,541</td>
<td>914</td>
<td>1,276</td>
</tr>
<tr>
<td>Services with small firm</td>
<td>1,276</td>
<td>1,334</td>
<td>926</td>
<td>1,415</td>
<td>934</td>
<td>1,287</td>
<td>916</td>
<td>1,155</td>
</tr>
<tr>
<td>Agriculture with large firm</td>
<td>1,683</td>
<td>1,725 (A)</td>
<td>1,566</td>
<td>2,109</td>
<td>1,685</td>
<td>1,249</td>
<td>1,322</td>
<td>1,528</td>
</tr>
<tr>
<td>Manufacturing with large firm</td>
<td>1,572</td>
<td>1,610</td>
<td>1,460</td>
<td>1,812</td>
<td>1,463</td>
<td>1,334</td>
<td>1,449</td>
<td>1,470 (D)</td>
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<tr>
<td>Services with large firm</td>
<td>1,678</td>
<td>1,797</td>
<td>1,369</td>
<td>1,939</td>
<td>1,504 (C)</td>
<td>1,666</td>
<td>1,148</td>
<td>1,156</td>
</tr>
</tbody>
</table>
What worker generates the largest externality?

Answer: A

### NEPAL LABOR EXTERNALITIES:

<table>
<thead>
<tr>
<th>To formal sector job registered firms in:</th>
<th>Total</th>
<th>Male</th>
<th>Female</th>
<th>Male (urban)</th>
<th>Female (urban)</th>
<th>Male (rural)</th>
<th>Female (rural)</th>
<th>Youth (total)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture with small firm</td>
<td>268</td>
<td>380</td>
<td>-28</td>
<td>273</td>
<td>-53</td>
<td>393</td>
<td>10</td>
<td>204</td>
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<tr>
<td>Manufacturing with small firm</td>
<td>784</td>
<td>685</td>
<td>408</td>
<td>348</td>
<td>342</td>
<td>808 (D)</td>
<td>410</td>
<td>610</td>
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<tr>
<td>Services with small firm</td>
<td>585</td>
<td>514</td>
<td>352</td>
<td>299 (B)</td>
<td>204 (C)</td>
<td>553</td>
<td>412</td>
<td>490</td>
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<tr>
<td>Agriculture with large firm</td>
<td>992</td>
<td>905</td>
<td>992</td>
<td>993</td>
<td>955</td>
<td>515</td>
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<td>863</td>
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<tr>
<td>Manufacturing with large firm</td>
<td>880</td>
<td>790</td>
<td>886 (A)</td>
<td>696</td>
<td>733</td>
<td>601</td>
<td>946</td>
<td>805</td>
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<tr>
<td>Services with large firm</td>
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<td>977</td>
<td>795</td>
<td>823</td>
<td>774</td>
<td>933</td>
<td>644</td>
<td>490</td>
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</table>
3. Applications of Cost Benefit Analysis for Jobs Projects
How project design choices affect jobs outcomes
– Business Plan Competition simulation exercise

- Business plan competitions are a popular way to support SMEs in LIC contexts
- Normally the Jury will select the most promising / viable projects and give them a fixed amount of grant - either an absolute “prize” amount or a fixed share of their investment plan (matching grant). Technical assistance is also offered.
- Sometimes, they are asked also to give some weight to job creation in their choices, but it is rarely systematic of rigorous
- This design implicitly assumes that projects have similar capital intensity and subsidy needs; so ranking based on profitability gives the maximum likelihood of supporting sustainable projects/jobs that survive after program support ends.
- But private investment projects are NOT always similar in structure
- We studied how the rules affect jobs impacts in a setting where labor intensity and subsidy needs vary across a reasonable range, using a model with 5,000 firms in it.
- The results are striking: focusing on projected JLEs (earnings gains and social externalities) and building in an “auction” mechanism to distribute subsidy efficiently can produce much better jobs effects.
How project design choices affect jobs outcomes – Business Plan Competition simulation exercise

We tested seven rules to allot funds in a business plan competition:
- Financial returns
- Social returns
- Financial-social returns
- Ratio of financial benefits to subsidy
- Ratio of economic benefits to subsidy
- **Ratio of Jobs-Linked Externality to subsidy**
- Random

Ratio of JLE to subsidy performs best.
Productivity and subsidy under different selection mechanisms
Tunisia Youth Economic Inclusion Project

Integrated approach

**SUPPLY SIDE:**
- recruitment,
- profiling,
- developing tailored service bundles (skills training, job search assistance, etc.)

**DEMAND SIDE:**
- value chain development (investments & services),
- microenterprise creation.
**Estimation strategy**

\[ SRR = \frac{\text{Total Economic and Social benefits} - \text{Total Costs}}{\text{Total Costs}} \]

<table>
<thead>
<tr>
<th></th>
<th>Financial Benefits</th>
<th>Economic &amp; Social Benefits</th>
<th>Financial Costs</th>
<th>Economic Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Supply side</strong></td>
<td>INCOME GAINS TO WORKERS</td>
<td>LOWER CRIME, CONFLICT, INCREASED HUMAN CAPITAL ACCUMULATION, ETC.</td>
<td>OPERATING COSTS (BUDGET)</td>
<td>FORGONE INCOME OF WORKERS IN OLD JOB</td>
</tr>
<tr>
<td><strong>Demand side</strong></td>
<td>FIRMS INCOME</td>
<td>JLEs (INCOME TO WORKERS AND SOCIAL EFFECTS)</td>
<td>OPERATING COSTS (BUDGET)</td>
<td>FORGONE INCOME OF WORKERS IN OLD JOB</td>
</tr>
</tbody>
</table>
Estimating income gains to workers

1. Increased employment rate
2. Higher wages
Integrated approach: Modelling interaction effects

SUPPLY SIDE COMPONENT

BENEFICIARIES GRADUATING FROM PROGRAM WITH SECTOR-SPECIFIC SKILLS

GREATER SUPPLY SIDE BENEFITS
BIGGER IMPACT ON EMPLOYMENT RATE OF BENEFICIARIES

DEMAND SIDE COMPONENT

FIRMS FUNDED WITH NEW JOBS TO BE FILLED

GREATER DEMAND SIDE BENEFITS
HIGHER PRODUCTIVITY WORKERS HIRED (~10% INCREASE)
# Tunisia Cost – benefit calculation

**Total project jobs, costs, and benefits (US Dollars)**

<table>
<thead>
<tr>
<th>Year</th>
<th>Jobs</th>
<th>Economic Benefits</th>
<th>Social Benefits</th>
<th>Economic Costs</th>
<th>Net Benefit</th>
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<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>19,050,000</td>
<td>-19,050,000</td>
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<tr>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>19,050,000</td>
<td>-19,050,000</td>
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<tr>
<td>2</td>
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<td>-19,050,000</td>
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<td>3</td>
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<td>4</td>
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<td>24,781,468</td>
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<tr>
<td>5</td>
<td>9,451</td>
<td>22,383,265</td>
<td>2,115,330</td>
<td>0</td>
<td>24,498,595</td>
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<tr>
<td>6</td>
<td>9,203</td>
<td>22,159,323</td>
<td>2,070,542</td>
<td>0</td>
<td>24,229,865</td>
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<tr>
<td>7</td>
<td>8,967</td>
<td>21,946,579</td>
<td>2,027,993</td>
<td>0</td>
<td>23,974,572</td>
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<tr>
<td>8</td>
<td>8,744</td>
<td>21,744,472</td>
<td>1,987,572</td>
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<td>23,732,044</td>
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<td>9</td>
<td>8,531</td>
<td>21,552,470</td>
<td>1,949,171</td>
<td>0</td>
<td>23,501,641</td>
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<td>10</td>
<td>8,329</td>
<td>21,370,069</td>
<td>1,912,691</td>
<td>0</td>
<td>23,282,759</td>
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<tr>
<td>11</td>
<td>8,137</td>
<td>21,196,787</td>
<td>1,878,035</td>
<td>0</td>
<td>23,074,822</td>
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<tr>
<td>12</td>
<td>7,955</td>
<td>21,032,169</td>
<td>1,845,111</td>
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<td>22,877,281</td>
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<td>13</td>
<td>7,782</td>
<td>20,875,783</td>
<td>1,813,834</td>
<td>0</td>
<td>22,689,617</td>
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<td>14</td>
<td>7,618</td>
<td>20,727,216</td>
<td>1,784,120</td>
<td>0</td>
<td>22,511,336</td>
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<td>15</td>
<td>7,461</td>
<td>20,586,077</td>
<td>1,755,893</td>
<td>0</td>
<td>22,341,969</td>
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<td>16</td>
<td>7,313</td>
<td>20,451,995</td>
<td>1,729,076</td>
<td>0</td>
<td>22,181,071</td>
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<td>20,324,617</td>
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<td>1,679,399</td>
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<td>21,883,007</td>
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<td>19</td>
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<td>20,088,649</td>
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<td>21,745,056</td>
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<td>20</td>
<td>6,790</td>
<td>19,979,439</td>
<td>1,634,565</td>
<td>0</td>
<td>21,614,004</td>
</tr>
</tbody>
</table>

**SRR (%) for...**

<table>
<thead>
<tr>
<th></th>
<th>Without interaction effects</th>
<th>With interaction effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supply side</td>
<td>26.3</td>
<td>30.9</td>
</tr>
<tr>
<td>Demand side</td>
<td>10.7</td>
<td>11.2</td>
</tr>
<tr>
<td>Total project</td>
<td>18.1</td>
<td>20.8</td>
</tr>
</tbody>
</table>
West Bank and Gaza: fragile and conflict vulnerable (FCV) context

Conflict affected

- Aid driven economy and Fiscal constraint
- Weak governance and institutional capacity of the Palestinian Authority (PA)
- Restriction on movement and access of goods and labor

Labor Market

- Limited private investment and suppressed demand for labor
- Skills development: insufficiently coordinated, weakly linked to the private sector
- High unemployment, low labor force participation, high jobs-linked Externalities
Investment opportunities do exist, even in the constrained investment climate (fragility).

**ICF Financing Facility**

**Aim:** provide complementary financing to enable private investors to invest:

**Procedure:** Investors submit proposals for ICF support. Due diligence entails:

- Determine commercial soundness of proposal (financial analysis and IRR);
- Safeguards compliance; and
- Compute a Social Rate of Return (SRR) that incorporates estimated job-creation effects.

**SRR methodology**

Estimated social return from the jobs created (direct, indirect, and possibly induced).
Electricity, the biggest constraint in Gaza

**Gaza Strip**

<table>
<thead>
<tr>
<th>Demand</th>
<th>400 MW average to 500 MW peak</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supply</td>
<td>Current around 190 MW</td>
</tr>
<tr>
<td></td>
<td>120 from Israel</td>
</tr>
<tr>
<td></td>
<td>20 from Egypt</td>
</tr>
<tr>
<td></td>
<td>50 from Gaza</td>
</tr>
</tbody>
</table>

**Gaza Economic Zone**

- 32 factories
- Gaza’s largest private employer (2,500 jobs)
- Operated below 50% capacity since 2006

100% of current tenants indicate availability of electricity is biggest constraint to production

**Electricity blackouts**

Enterprises must either shut down operations or generate own electricity at a cost of $0.66 per kWh - a rate that would render any manufacturing process unsustainable.
Proposed intervention

- Solar generation: $12 million investment for 7MWp Rooftop Solar PV plant in Gaza for 56,000 m² of industries rooftops
- ICF grant
- IFC’s long term financing and blended financing
- MIGA political risk insurance for war and civil disturbance
- Sponsor equity

**Substantial development impact:**

- Generate jobs in short term by allowing enterprises to move from single shift operations to two and three shifts per day (around 800 jobs)
- Generate jobs in the medium term by allowing new potential tenants to move in (arrangements with GEDCO would allow the park to expand)
F4J targets three specific types of externalities derived from job creation

➢ Jobs for women
Impact on the accumulation of human capital of children (women tend to invest more than men in the education of their children)

➢ Jobs for youth and for low skilled/vulnerable workers
Reduce expenditures on social assistance programs, lower crime rates, social stability; counter radicalization and social violence.

➢ Jobs in vulnerable economic areas
Social impact of a job can be greater in remote areas. This is a “distance from market” externality.
How to estimate the value of jobs externalities?

Possible Approaches:

- **Construct complex models** with assumptions about causal links from a job to the desired outcomes (reduced poverty, reduced crime and violence, improved childhood development indicators etc.)

- **Measure the preferences of the relevant population** on the creation of jobs for particular groups of beneficiaries. Can be done using **Discrete Choice Experiments (DCE)**. Estimated value of externality can be expressed as a share of earnings.
DCE: quantitative technique for eliciting subjective preferences

- Questionnaire contains the choice set
- Respondents state preference between alternative scenarios
- Each scenario has multiple attributes
- Responses are used to determine to what extent preferences are influenced by each attribute and estimate their relative importance
“The Government is considering the implementation of a program to assist in job creation. This program will target specific types of jobs and will be financed partly by the World Bank and also with matching funds from people like you. Please review the components of each program described below and answer the questions..”

- Target group (survey sample) represents local stakeholders (government, policy makers, target ministries, civil society, etc.
- Questions presented scenarios of number and type of jobs and project costs. Different combinations of attributes were presented.
- Attributes of offered jobs:
  - Age, sex and education level of employee (young, adult); female, male);
  - Skill level of job: (skilled, unskilled);
  - Quality of the job (formal wage employment VS self-employment);
  - Place where the job is created (West Bank urban, West Bank rural, Gaza)
  - Cost of creating the job.

- Analysis estimates aggregate willingness to pay of the respondents for each bundle and highlights how they trade off the number and type of jobs.
Results: Estimation of the tax that respondents would be “willing to pay” to implement a job program

<table>
<thead>
<tr>
<th>Demographic Group</th>
<th>USD annual per job per respondent</th>
<th>USD annual per respondent</th>
<th>USD annual per job</th>
</tr>
</thead>
<tbody>
<tr>
<td>Young+Female+Skilled*</td>
<td>0.99</td>
<td>612</td>
<td>15,059</td>
</tr>
<tr>
<td>Young+Female+non-skilled</td>
<td>0.32</td>
<td>198</td>
<td>4,881</td>
</tr>
<tr>
<td>Young+Male+Skilled</td>
<td>0.72</td>
<td>448</td>
<td>11,017</td>
</tr>
<tr>
<td>Young+Male+non-skilled</td>
<td>0.13</td>
<td>82</td>
<td>2,021</td>
</tr>
<tr>
<td>Adult+Female+Skilled</td>
<td>0.92</td>
<td>570</td>
<td>14,029</td>
</tr>
<tr>
<td>Adult+Female+non-skilled</td>
<td>0.28</td>
<td>171</td>
<td>4,208</td>
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<tr>
<td>Adult+Male+Skilled</td>
<td>0.69</td>
<td>426</td>
<td>10,486</td>
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<tr>
<td>Adult+Male+non-skilled</td>
<td>0.10</td>
<td>60</td>
<td>1,464</td>
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<tr>
<td></td>
<td>0.42</td>
<td>259</td>
<td>6,370</td>
</tr>
</tbody>
</table>

*Values in ILS per month per job per respondent

- Tax per job respondents offer to pay is multiplied by estimated number of jobs that the project will create, and added to the benefit stream in the ERR calculation, to obtain SRR.

- Based on the projected creation of 620 indirect jobs plus 7 direct jobs, the ERR increases from 19% to 31% and the benefit to cost ratio from 1.9 to 3.9. The estimated IRR was only 10.2%.
Group exercise: [SEE HANDOUT]

Measuring project rates of return:
1. What is the FRR?
2. What is the SRR?
Thank you !