Returns to Apprenticeship Training?
Experimental Evidence from Ghana’s National Apprenticeship Program

Ghana Education Evidence Summit 2018
Improving Accountability for Better Learning Outcomes in Ghana: Evidence-informed Approaches to Education Policy and Practice

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Jamie McCasland, University of British Columbia
Key Takeaways

Preliminary Results of the Evaluation of the National Apprenticeship Programme (NAP)

- Youth more able to enroll in and complete apprenticeships
- Youth demonstrated more employable skills
- Youth shift more into self-employment from wage-employment
- Earnings decrease in the short-term
- Trainer performance and implementation details matter
- Follow up needed
Apprenticeships: A promising solution?
To high youth unemployment and lack of skills

- **Use existing firms** to provide training.

- Training *circumvents many of the critiques* of vocational training.

- Yet concerns about quality of training, especially since it relies on informal sector firms.
Apprenticeships are common in West Africa

• In urban Ghana, 40% of self-employed and 25% of wage employed workers had undertaken an apprenticeship.

• Despite their importance, there is **limited research on the effectiveness** of apprenticeships in African contexts.
  • In Malawi, researchers evaluated a 3-month apprenticeship program and found no improvements in labor market outcomes. (Cho et al, 2013)
  • In Uganda, researchers found that a formal vocational training improved transferrable skills and earnings more than an on-the-job training program. (Alfonsi et al, 2017)
Evaluation Design

Applicants (3928)

Treatment (2031)  Control (1568)

Firms (1087)  Matched apprentices (1197)

797 apprentices with 467 firms
Evaluation Timeline

August 2012
- Baseline/apprentice applications

May 2013
- Firm/worker placement meetings

October 2013
- Training commenced

August 2017
- Endline
Access to apprenticeships
NAP increases access to apprenticeships and improves completion rates

Preliminary Results of the Evaluation of the National Apprenticeship Programme (NAP)

Started Apprenticeship

- Full Sample: 75.5***
- Males in Construction: 73.2***
- Females in Cosmetology: 76.9***
- Females in Garment-making: 75.1***

Completed Apprenticeship

- Full Sample: 24.9
- Males in Construction: 25.2
- Females in Cosmetology: 28.8
- Females in Garment-making: 31.11**

*p<0.1, ** p<0.05, ***p<0.01
NAP access increases apprenticeship duration

Preliminary Results of the Evaluation of the National Apprenticeship Programme (NAP)

Apprenticeship Duration

<table>
<thead>
<tr>
<th></th>
<th>Full Sample</th>
<th>Males in Construction</th>
<th>Females in Cosmetology</th>
<th>Females in Garment-making</th>
</tr>
</thead>
<tbody>
<tr>
<td>Months</td>
<td>19.25</td>
<td>30.04</td>
<td>16.14</td>
<td>18.25</td>
</tr>
<tr>
<td>Control</td>
<td>22.84***</td>
<td>29.34</td>
<td>21.29***</td>
<td>22.49***</td>
</tr>
<tr>
<td>Treatment</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*\*p<0.1, ** p<0.05, ***p<0.01
Skills
NAP access improves crafts skills

Preliminary Results of the Evaluation of the National Apprenticeship Programme (NAP)

Craft Skills

*p<0.1, ** p<0.05, ***p<0.01
NAP access improves creativity

Preliminary Results of the Evaluation of the National Apprenticeship Programme (NAP)

Creativity

* z-score

- Full Sample: 0.231***
- Males in Construction: 0.666**
- Females in Cosmetology: 0.0642
- Females in Garment-making: 0.288***

*p<0.1, ** p<0.05, ***p<0.01
Labor Market Outcomes
NAP apprentices are less likely to be wage employed

Preliminary Results of the Evaluation of the National Apprenticeship Programme (NAP)

Wage Employed

<table>
<thead>
<tr>
<th></th>
<th>Full Sample</th>
<th>Males in Construction</th>
<th>Females in Cosmetology</th>
<th>Females in Garment-making</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Control</strong></td>
<td>15.8</td>
<td>29.6</td>
<td>15.6</td>
<td>12.1</td>
</tr>
<tr>
<td><strong>Treatment</strong></td>
<td>11.69***</td>
<td>23.46</td>
<td>10.13***</td>
<td>9.71</td>
</tr>
</tbody>
</table>

* *p<0.1, ** p<0.05, ***p<0.01
NAP access increases self-employment

Preliminary Results of the Evaluation of the National Apprenticeship Programme (NAP)

Self Employed

<table>
<thead>
<tr>
<th>Category</th>
<th>Control</th>
<th>Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full Sample</td>
<td>29.7%</td>
<td>32.47%</td>
</tr>
<tr>
<td>Males in Construction</td>
<td>18.9%</td>
<td>14%</td>
</tr>
<tr>
<td>Females in Cosmetology</td>
<td>31.7%</td>
<td>38.87***</td>
</tr>
<tr>
<td>Females in Garment-making</td>
<td>31.3%</td>
<td>31.63</td>
</tr>
</tbody>
</table>

*p<0.1, ** p<0.05, ***p<0.01
Monthly earnings are lower for those with NAP access

Preliminary Results of the Evaluation of the National Apprenticeship Programme (NAP)

Total Monthly Earnings

<table>
<thead>
<tr>
<th>Category</th>
<th>Control</th>
<th>Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full Sample</td>
<td>89.19</td>
<td>78.06**</td>
</tr>
<tr>
<td>Males in Construction</td>
<td>197.6</td>
<td>152.66**</td>
</tr>
<tr>
<td>Females in Cosmetology</td>
<td>73.21</td>
<td>70.64</td>
</tr>
<tr>
<td>Females in Garment-making</td>
<td>71.89</td>
<td>63.41</td>
</tr>
</tbody>
</table>

* p<0.1, ** p<0.05, *** p<0.01
Self-employment earnings are similar for treatment and control

Preliminary Results of the Evaluation of the National Apprenticeship Programme (NAP)

Self-Employed Monthly Earnings

- **Full Sample**: 41.52 (Control), 40.79 (Treatment)
- **Males in Construction**: 67.74 (Control), 50.14 (Treatment)
- **Females in Cosmetology**: 36.14 (Control), 43.86 (Treatment)
- **Females in Garment-making**: 39.84 (Control), 36.68 (Treatment)
Conclusions and Policy Lessons

Preliminary Results of the Evaluation of the National Apprenticeship Programme (NAP)

• Youth more able to enroll in and complete apprenticeships
• NAP access increases employable skills in youth
• Youth shift more into self-employment from wage-employment
• Earnings decrease in the short-term
• Female cosmetologists have strongest effect
  • Likely due to shorter duration
• Follow-up is needed since many youth still in training
Conclusions and Policy Lessons

Preliminary Results of the Evaluation of the National Apprenticeship Programme (NAP)

• Trainer skill, knowledge, and effort matter
  • This suggests that targeting and vetting trainers is extremely important
  • Using incentives/performance contracts may be effective

• Ideas for improving outcomes
  • Recruitment and outreach strategy
  • Monitoring implementation
  • Anticipating barriers to success (ie. transportation, child care)
Acknowledgments

This project would not have been possible without:

Principal Investigators

• Isaac Mbiti, University of Virginia
• Morgan Hardy, New York University Abu Dhabi
• Jamie McCasland, University of British Columbia

Implementing Partners


Funders

Thank you
Introduction: Youth Unemployment and Skills

- **Youth unemployment is a major economic and social problem.**
  - In Africa, youth account for 60% of the unemployed and 72% of adolescents live on less than $2/day.
  - In Ghana, youth ages 15-24 are much less likely to be working than adults ages 25-65.

- **Lack of skills** is often cited as an impediment to youth employability.
  - 20% of Ghanaian firms cite lack of skills as an impediment.
  - Many JHS graduates cannot progress to SHS or vocational schools.
Implementation

• Program applicants:
  • Mostly female, around 23 years of age, and had close to 7.5 years of education.
  • 41% of applicants were not working at Baseline and among those that were working, 42% were in unpaid jobs.

• Firms/trainers:
  • Small and informal, with 3-4 workers on average; only about 15% had paid workers
  • Profits varied by trade, with construction more profitable than cosmetology and garments.
# Applicant Characteristics

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>All</th>
<th>Urban</th>
<th>Rural</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female (%)</td>
<td>75.4</td>
<td>77.9</td>
<td>67.9</td>
</tr>
<tr>
<td>Age (yrs)</td>
<td>23.277</td>
<td>23.283</td>
<td>23.448</td>
</tr>
<tr>
<td>Years of schooling</td>
<td>7.42</td>
<td>7.432</td>
<td>7.375</td>
</tr>
<tr>
<td>Mother: years of schooling</td>
<td>3.493</td>
<td>3.889</td>
<td>2.348</td>
</tr>
<tr>
<td>Father: years of schooling</td>
<td>5.894</td>
<td>6.39</td>
<td>4.561</td>
</tr>
<tr>
<td>HH size (adults + children)</td>
<td>6.974</td>
<td>6.559</td>
<td>8.198</td>
</tr>
<tr>
<td>Married (%)</td>
<td>31.8</td>
<td>31</td>
<td>38</td>
</tr>
<tr>
<td>Children (%)</td>
<td>43.6</td>
<td>45.5</td>
<td>45.1</td>
</tr>
</tbody>
</table>
Labor Market Participation at Baseline

Full sample

- 41% Not working
- 59% Wage job
- 21% Own business
- 6% Unpaid work
- 7% Multiple Jobs

Ministry of Education
REPUBLIC OF GHANA
## Firm Characteristics

<table>
<thead>
<tr>
<th></th>
<th>All</th>
<th>Construction</th>
<th>Cosmetology</th>
<th>Garments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total workers</td>
<td>3.484</td>
<td>4.502</td>
<td>3.261</td>
<td>3.062</td>
</tr>
<tr>
<td>Paid workers (%)</td>
<td>14.701</td>
<td>28.216</td>
<td>9.038</td>
<td>10.512</td>
</tr>
<tr>
<td>Number of apprentices</td>
<td>2.781</td>
<td>2.716</td>
<td>2.929</td>
<td>2.704</td>
</tr>
<tr>
<td>Average age (yrs) of workforce</td>
<td>23.416</td>
<td>24.903</td>
<td>22.849</td>
<td>22.906</td>
</tr>
<tr>
<td>Average tenure (yrs) of workforce</td>
<td>2.379</td>
<td>3.337</td>
<td>1.847</td>
<td>2.188</td>
</tr>
<tr>
<td>MCP’s hours worked last week</td>
<td>57.5</td>
<td>51.237</td>
<td>65.561</td>
<td>54.896</td>
</tr>
<tr>
<td>MCP’s hours worked normal week</td>
<td>61.767</td>
<td>57.789</td>
<td>69.771</td>
<td>57.865</td>
</tr>
<tr>
<td>Hours worked by total workforce last week</td>
<td>195.946</td>
<td>202.88</td>
<td>220.156</td>
<td>171.555</td>
</tr>
<tr>
<td>Hours worked by total workforce normal week</td>
<td>227.043</td>
<td>256.602</td>
<td>242.759</td>
<td>194.831</td>
</tr>
</tbody>
</table>
## Firm Characteristics

<table>
<thead>
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<th>Construction</th>
<th>Cosmetology</th>
<th>Garments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wages of total workforce last month (GHC)</td>
<td>167.964</td>
<td>494.337</td>
<td>59.825</td>
<td>78.531</td>
</tr>
<tr>
<td>Average apprenticeship fees (GHC)</td>
<td>175.177</td>
<td>142.382</td>
<td>202.08</td>
<td>170.551</td>
</tr>
<tr>
<td>Total sales last month (GHC)</td>
<td>666.73</td>
<td>1649.376</td>
<td>406.711</td>
<td>410.781</td>
</tr>
<tr>
<td>Total profits last month (GHC)</td>
<td>316.923</td>
<td>675.508</td>
<td>228.502</td>
<td>217.949</td>
</tr>
<tr>
<td>Number customers last month</td>
<td>21.849</td>
<td>11.286</td>
<td>32.207</td>
<td>17.967</td>
</tr>
<tr>
<td>Total business assets incl. land (GHC)</td>
<td>7053.517</td>
<td>10504.03</td>
<td>6614.163</td>
<td>5734.15</td>
</tr>
<tr>
<td>Total business assets</td>
<td>3998.609</td>
<td>6808.417</td>
<td>3494.494</td>
<td>3052.591</td>
</tr>
</tbody>
</table>
NAP access may improve managerial practices

Managerial Skills

- Full Sample: 0.0426
- Males in Construction: -0.344
- Females in Cosmetology: 0.0876
- Females in Garment-making: 0.0423
NAP apprentices are less likely to be working

![Graph showing the percentage of apprentices working in different groups. The graph includes bars for Full Sample, Males in Construction, Females in Cosmetology, and Females in Garment-making, comparing Control and Treatment groups. The data points are 71.3% for Full Sample, 84.9% for Males in Construction, 67% for Females in Cosmetology, and 70.6% for Females in Garment-making. The asterisks indicate statistical significance: *p<0.1, **p<0.05, ***p<0.01.]