Gender differences and women economic empowerment in the Extractive Sector: Evidence from Ghana

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Background

• **Women Economic Empowerment** refers to the capacity of women to
  – participate in, contribute to and benefit from growth processes in ways
    • that recognize the value of their contributions, respect their dignity and make it possible to negotiate a fairer distribution of the benefits of growth.
    • at the national, local, family and household level

• WEE measured through but not restricted to (i) education, (ii) LM participation, (iii) quality of participation and (iv) earnings
Background & Motivation

• Ghana’s, extractive subsector of the industrial sector has been one of the major drivers of the country’s growth over the last 3 decades.

• As main export earnings (44.2% for gold & 12.1% for oil) and major source of government revenue (tax revenue & royalties)

• The sub-sector comprises
  – Mining (gold, diamond, salt, bauxite)
  – Oil and gas extraction
  – Quarrying
Background & Motivation

- Mining is the dominant extractive activity accounting for about two-thirds of total extractive activity.
- Quarrying account for a little over a quarter of extractive activity.
- Diamond mining and oil & gas extraction account for 2% each.
Background & Motivation

- The extractive sector grew on average by 33.4% against 5.4% overall GDP growth over 2007-2014
- Start of commercial oil production in 2011 pushed extractive growth to 207% raising its GDP share from 2.3% in 2010 to 8.4% in 2011
• Inclusiveness of opportunities of extractive activities depends on
  – the participation in the sector’s activity in terms of employment & earnings
• E.g. for economic growth to be an effective driver of women economic empowerment (WEE)
  – depends on the source of the growth and how involved women are in the growth process.
Issues and motivation

• In recent past when Ghana’s economy was driven by cocoa the benefits accrued to women was far below their male counterparts
  – because they generally participated as contributing family worker

• A shift of growth drive to mining and oil suggests that for women to benefit equally as men from this shift
  – their representation in activities of these sectors to minerals (particularly gold) and now oil.
Objectives

• Analyse gender differences in Ghana’s extractive sector (to show if it undermines WEE) in terms of
  – Occupational representation;
  – Status of employment
  – Earnings and whether the difference smacks of discrimination & implication for WEE;
• Account for the role of gender differences in education
• Extractive activities are less labor intensives accounting for 1.6% of total employment (or about 300,000) in 2013
Gender differences in Employment in Extractives, 2000-2013

Male-female representation in Extractives (%)

<table>
<thead>
<tr>
<th>Year</th>
<th>Male</th>
<th>Female</th>
<th>All</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>1.9</td>
<td>0.9</td>
<td>1.4</td>
</tr>
<tr>
<td>2006</td>
<td>1.1</td>
<td>0.3</td>
<td>0.7</td>
</tr>
<tr>
<td>2010</td>
<td>1.8</td>
<td>0.4</td>
<td>1.1</td>
</tr>
<tr>
<td>2013</td>
<td>2.8</td>
<td>0.6</td>
<td>1.6</td>
</tr>
</tbody>
</table>

Sex Composition of employment in extractives (%)

<table>
<thead>
<tr>
<th>Year</th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>68.3</td>
<td>31.7</td>
<td></td>
</tr>
<tr>
<td>2006</td>
<td>77.0</td>
<td>23.0</td>
<td></td>
</tr>
<tr>
<td>2010</td>
<td>80.9</td>
<td>19.1</td>
<td></td>
</tr>
<tr>
<td>2013</td>
<td>81.2</td>
<td>18.8</td>
<td></td>
</tr>
</tbody>
</table>
Different extractive activities, 2013

- Female composition is highest in quarrying where technology usage and education requirement is very low.
- Petroleum and gas has only 8% women composition with mining reporting 14%.

<table>
<thead>
<tr>
<th>Extractives</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mining</td>
<td>85.9</td>
<td>14.1</td>
</tr>
<tr>
<td>Gold</td>
<td>85.6</td>
<td>14.4</td>
</tr>
<tr>
<td>Diamond</td>
<td>87.5</td>
<td>12.5</td>
</tr>
<tr>
<td>Quarrying</td>
<td>55.7</td>
<td>44.3</td>
</tr>
<tr>
<td>Petroleum &amp; Gas</td>
<td>92.3</td>
<td>7.7</td>
</tr>
<tr>
<td>Crude petroleum</td>
<td>75.0</td>
<td>25.0</td>
</tr>
<tr>
<td>Natural gas</td>
<td>100.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Support activities</td>
<td>100.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Others</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Salt extraction</td>
<td>80.0</td>
<td>20.0</td>
</tr>
</tbody>
</table>
Behind the numbers- Qualitative survey

• Small scale mining is tedious and women cannot withstand the condition.
• 35.9% of men and 47.0% of women claims it's dangerous for women to work in extractives.
• Perception about masculinity of mining activity; As the adage say “barima beko Tarkwa” is a clear evidence.
• 61.5% agrees that some tasks are physically demanding and must not be given to women.
• 92.9% indicates that men are preferred in the hiring process to women in extractives.
Behind the numbers- Qualitative survey

• The “isolated” nature of mining sites (mostly out of town) tends to discourage particularly women from engaging in mining for a longer period.
• Engagement in mining competes with time for family which women find it difficult to cope
• Some discouraging comments about women involvement in mining as “work for men” is a factor
# Type of Jobs in extractives

<table>
<thead>
<tr>
<th>Status on the Job</th>
<th>Mining &amp; Petroleum</th>
<th>Quarrying</th>
<th>All extractives</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
<td>Male</td>
</tr>
<tr>
<td>High Skilled</td>
<td>11.4</td>
<td>8.9</td>
<td>4.4</td>
</tr>
<tr>
<td>Semi-skilled</td>
<td>3.2</td>
<td>2.2</td>
<td>0.0</td>
</tr>
<tr>
<td>Production</td>
<td>41.3</td>
<td>28.9</td>
<td>22.1</td>
</tr>
<tr>
<td>Elementary</td>
<td>41.6</td>
<td>60.0</td>
<td>70.6</td>
</tr>
<tr>
<td>Other</td>
<td>2.6</td>
<td>0.0</td>
<td>2.9</td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>

**Behind the numbers:**

- Lower education of women than men
- Women are underrepresented in science, math & engineering
- Non-exposure of girls to prospects in mining related disciplines in school
- Cultural barriers that tend to see women as better in the kitchen
Education of workforce in extractives

- Education of women in extractives is far lower than males
- It is worse in mining and petroleum extraction than quarrying
- This explains the lower job status of women than men
Segregation

• Segregation concerns the tendency for men and women to be engaged in different occupations across the entire spectrum of occupations.

• In spite of women underrepresentation in extractives, they are highly represented in elementary jobs (e.g. cleaners, cooks, labourers, refuse workers etc.);

• But are highly underrepresented in high skilled and better-remunerated jobs such as managers, supervisors, engineers;
Segregation

- We adopt 3 indices to assess occupational segregation within extractives & entire LM
  - Duncan Index (ID)
    \[
    ID = \frac{1}{2} \sum_{i=1}^{n} \left| \frac{W_i}{W} - \frac{M_i}{M} \right|
    \]
  - Kamel Machlachlan Index (KM)
    \[
    KM = \frac{1}{T} \sum_{i=1}^{n} \left| W_i - a(W_i - M_i) \right|
    \]
  - Size Standardized index (Ds)
    \[
    D_s = \frac{1}{2} \sum_{i=1}^{n} \left| \frac{W_i}{T_i} - \frac{M_i}{T_i} \right|
    \]
Index occupational segregation of extractives and the entire labour market

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Duncan dissimilarity index</td>
<td>0.414</td>
<td>0.183</td>
<td>0.258</td>
<td>0.212</td>
</tr>
<tr>
<td>Karmel and Maclachlan index</td>
<td>0.169</td>
<td>0.091</td>
<td>0.106</td>
<td>0.085</td>
</tr>
<tr>
<td>Size-standardized dissimilarity</td>
<td>0.513</td>
<td>0.401</td>
<td>0.426</td>
<td>0.314</td>
</tr>
</tbody>
</table>

Source: Computed by Authors from the GLSS V of 2005/06 and GLSS VI of 2012/13

Why segregation?

- Women are not allowed to get closer to the machine or the operating area because of the possibility of being in their menstrual period
- Women are mostly confined to elementary activities such as cooking
- Patriarchy and intimidating behavior of some men
Earnings differences – Quantile decomposition

• We apply quantile decomposition to nationally representative household survey of 2013

\[
\ln \bar{E}_i^m - \ln \bar{E}_i^w = (\bar{x}_i^m - \bar{x}_i^w) \beta_j^m + (\beta_j^m - \beta_j^w) \bar{x}_i^w
\]

• Observed characteristics used include age, marital status, effort (i.e. hours of work), education, location, skills or job status

• Adopt Heckman two-stage correction method to correct for potential selectivity bias.
# Analysis of earnings differences

## Table 5: Decomposition of gender differences of earnings in the Extractives WITH SELECTION CORRECTION using Quantile decomposition

<table>
<thead>
<tr>
<th>Differences &amp; Source</th>
<th>Quantile</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.25</td>
<td>0.5</td>
<td>0.75</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall Difference</td>
<td>-1.0369***</td>
<td>-0.8182***</td>
<td>-0.9861***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Source</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Explained/Characteristics</td>
<td>-0.9263***</td>
<td>-0.8035***</td>
<td>-0.8436***</td>
<td>(89.33%)</td>
<td>(98.20%)</td>
</tr>
<tr>
<td></td>
<td>(17.27%)</td>
<td>(18.72%)</td>
<td>(16.54%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td>-0.1791***</td>
<td>-0.1533**</td>
<td>-0.1631***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unexplained/Coefficient/</td>
<td>0.1106</td>
<td>0.0147</td>
<td>-0.1425***</td>
<td>(10.67%)</td>
<td>(-1.80%)</td>
</tr>
<tr>
<td>No. of Observations</td>
<td>260</td>
<td>260</td>
<td>260</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>73</td>
<td>73</td>
<td>73</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

***p<1% **p<5% *p<10%

Source: Estimated from GLSS VI of 2013
Analysis of earnings differences

• Gender differences in favor of men is quite strong at lower levels of earnings than mean and upper level in
• Observed characteristic (or endowment) account for substantial differences in gender earnings differences
• Evidence of discrimination exists at upper (75th quantile).
• Lower education and skills of women relative to men explain quite substantial and significant gender earnings differences in Ghana extractive sector.
Behind the Figures - some qualitative explanation

• In the field survey, 80.3% finds men and women earn the same wages for similar job holdings
• BUT 49.4% claims major differences in roles assigned to male and female and differences in education explains differences in job status and earnings
• Cultural beliefs particularly among small-scale miners also prevent women from engaging in the actual extraction.
• Women used to carry the sand and do washing but the excavators have taken over that task
Conclusion & Policy Thoughts

• There is evidence of gender differences in favor of men – based on secondary and primary data analysis
• This has the effect of undermining women economic empowerment (measured by education, participation and earnings)
• Policy thoughts
  – Promotion of women education
  – More science education and role model issue
  – Addressing cultural beliefs
  – Flexibility in the work of mining and providing access to education closer to the mining site
  – Regulation to prevent “hidden” intimidation.
Thanks for your attention