The role of culture, tradition, and social norms in determining nutritional outcomes

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CENTER FOR CHILD WELL-BEING AND DEVELOPMENT
ANNUAL CONFERENCE 2017
University of Zurich
March 18, 2017
This presentation draws on...


» Review of the evidence on how culture, tradition, and social norms affect nutritional outcomes in developing countries

» Case study from Ghana: impact of a change in customary inheritance practices on children’s nutrition
Starting point

Some disturbing facts:
• 12.5% of the world’s population undernourished (of which 98% in developing countries)
• 26% of children are stunted (40% in Sub-Saharan Africa, 48% in India)

Why?
• Inadequate global food production? Unequal distribution
• Many proposed explanations: low agricultural productivity in developing countries, volatility international prices, climate change, desertification, sanitation, disease environment, biological, etc

This presentation:
• Do social & customary norms play a role?
Why are so many people undernourished?
The role of social & customary norms at different levels

1. Food production

2. Food consumption & caloric intake (for a given food production)

3. Distribution of resources within the hh
1. Is agricultural productivity as high as it can be?

- Agricultural yield gap in developing countries

- Reasons for low yields
  - Customary systems related to ownership and inheritance of land: low security of tenure $\Rightarrow$ incentives to make productive investments
    - Land titling programs (co-titling in Ethiopia, Tanzania, Rwanda); reforms of the inheritance systems (India, Ghana)

  - The inefficiency of gender bias: women achieve lower yields on their plots, gender-biased access to inputs & weak property rights
    - European settlers in Africa taught new agricultural methods to male cultivators (Boserup, 1970)
1. Is agricultural productivity as high as it can be? (cont’d)

- Technology exists but **low adoption**
  - 20-30% of farmers report using fertilizers in past year in Kenya, Ethiopia, Mali → Rational response to low returns to inputs? NO, returns of 69% per year
  - **Strong ties with extended family** may prevent farmers from investing in technology because of the (informal) obligation to help and share risk with needy family members
  - **Social learning & information networks**
  - Lack of information
  - Risk aversion, yet rainfall insurance take up low
  - Credit constraints, time-inconsistent preferences
2. For given food production, is individual caloric intake as high as it can be?

— The expenditure choices of poor people on the edge of malnutrition do not always translate into max caloric intake

- Spending on religious festivals, funerals, weddings is an important part of the budget for many extremely poor hhs
- ‘Even the extremely poor do not seem to be as hungry for additional calories as one might expect’ (Banerjee and Duflo 2011, p. 147)
2. For given food production, is individual caloric intake as high as it can be? (cont’d)

— **Food cultures** (Atkin, 2013)
  - When migrating to a different state with different prices, people on the edge of malnutrition do not fully adapt their diet to get max caloric intake given local prices.
  - Instead, they make nutritionally suboptimal choices due to preference for traditional food.

— Yet **assimilation** into new culture can have **negative effects** on nutrition.

— **Religious norms:** dietary restrictions among Buddhists, Hindus, Muslims, fasting during Ramadan.
3. Is food distributed equally within the household?

— In many **patriarchal** cultures women typically have weaker access to resources
  

  — Large evidence that mother’s control of resources impacts child’s health and schooling more than father’s (Thomas, 1990, 1994, 1997; Haddad et al, 1997; Duflo, 2003)

— **Highly context-dependent**: local cultural norms
  
  — RCT in Burkina Faso: transfer to fathers lead to better nutritional outcomes for children especially during years with low rainfall: cultural norms prescribing that fathers responsible for feeding the family (Akresh et al, 2016)

— Cultural norms leading to **son preference** in some contexts → health disparities within a hh...
3. Is food distributed equally within the household? (cont’d)

- Son preference
  - Unequal breastfeeding: boys breastfed longer (Jayachandran and Kuziemko, 2011)
  
- Women with first-born daughters have more children and shorter birth spacing (Clark, 2000; Milazzo, 2014)
  - Low birthweight and pre-term deliveries (King, 2003)
  - Less resources to share within the hh (Jensen, 2005; Barcellos et al, 2014)

- Controlling for the effect on family size, boys receive more childcare time than girls, they are breastfed longer and get more vitamin suppl. (Barcellos et al, 2014)
3. Is food distributed equally within the household? (cont’d)

- **Son preference** (cont’d)
  
  - Two well-known puzzles possibly explained by son preference
    - Hindu-Muslim nutritional & mortality gap in India (Bhalotra et al, 2010; Iyer and Joshi, 2013)
    - India-Africa child height gap (Jayachandran and Pande, 2013)

  - Increased access to technologies for **fetal sex determination** associated with better nutritional outcomes for surviving girls (Hu and Schlosser, 2015)

  - Among **adult women**, having a first-born daughter significantly **increases** the probability of being **moderately or severely anemic** by 4.8% (Milazzo, 2014)
    
    - The effect of a **second and third-born girl** (conditional on previous female births) is to 7.8 and 17%
    - Closely spaced pregnancies are associated with higher risk of maternal mortality and morbidity (Conde-Agudelo, and Belizan, 2000)
Main messages from Part 1

• Culture and social norms matter!

• Norms and traditions can affect food production, food consumption, caloric intake and distribution of resources within the household through a variety of channels
Empirical analysis:

- **Customary norm**: traditional inheritance rules
- **Outcome**: children’s nutrition

Example: Inheritance reform and investments in children’s health and nutrition in Ghana
• **Descent systems and inheritance**
  – *Patrilineal*: man's property goes to the son
  – *Matrilineal*: man's property goes to other males members of his kin group (typically the brother or sister’s son)
  – Common to both: rights are *gender-linked*

• **Policy experiment**: **1985 Intestate Succession Law** in Ghana
  – Aimed to ‘modernize’ the country, give protection to the nuclear family

• The Law significantly changed practices for *matrilineal groups*, i.e. the *Akan*, while patrilineal (*non-Akan*) unaffected
  – Before the reform Akan men could not bequeath land to their sons
  – After the reform they can
Expected impacts on children’s nutrition

• Inheritance reform: ↑ land to sons, ↓ land to kin group
  – Reduction uncertainty over sons’ future inheritance

• After the reform: if land and nutrition *complementary* inputs, expect *increased* investment in *nutrition*
  – Consistent with the nature of activities on the farm
  – Possibly an incentive to nourish children to become strong farmers

• Predictions:
  – ↑ nutrition for Akan (vs non-Akan)
  – Only for Akan *boys*
  – Only in households with *land*
Data

• 2 rounds of the Ghana Living Standards Measurement Survey: 1987-88, with anthropometrics

• Children aged 0 to 60 months in rural Ghana

• Height-for-age z-score our indicator of a child’s long-term nutritional status

  – Indicates by how many standard deviations the height of a child deviates from the average height of a child of the same age and gender in the reference population of (well-nourished) children in the United States

  – The more negative the more undernourished the child is compared to the reference
Average height-for-age z-scores, by ethnicity and gender
Methodology

- Overcome the lack of before & after data, all children exposed to the law
- Focus on height-for-age, most affected in the first years of life
- **Difference-in-difference strategy**
  - More affected (born after 1985) vs less affected (born before 1985) by the Law
  - Akan vs non-Akan (to account for secular trends)
  - **PLACEBOS**: Boys vs girls, landed vs landless households

\[ haz_{i,t,k,r} = c + \beta_1 (akan_i \ast young_{i,t}) + \beta_2 akan_i + \beta_3 X_{i,t,k,r} + \varphi_t + \mu_k + \alpha_r + \varepsilon_{i,t,k,r} \]

- $\varphi_t, \mu_k, \alpha_r$ are birth year, wave, and region fixed effects
- $X_{i,t,k,r}$ is a vector of individual covariates that includes age and age squared (in months), household size, parental education (number of years of education completed by mother and father, included separately), whether the child lives in a female-headed household, religion of the household head, age and height of the mother (the latter to capture the influence of genetics)
- $\beta_1 > 0$ implies that, compared to non-Akan children, Akan children born after 1985 have experienced larger gains in nutritional status relative to older children
Height-for-age z-scores by year of birth, gender, and ethnicity

Pooled GLSS1 and GLSS2. Rural sample. Local polynomial smooth plot.
Effect of the Intestate Law on children’s nutrition by gender and land ownership

**Dep. variable: height-for-age z-scores**

<table>
<thead>
<tr>
<th>Variable</th>
<th>MALES (1)</th>
<th>FEMALES (2)</th>
<th>MALES LANDED (3)</th>
<th>LANDELSS (4)</th>
<th>FEMALES LANDED (5)</th>
<th>LANDELSS (6)</th>
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</thead>
<tbody>
<tr>
<td>Akan * Young</td>
<td>0.338*</td>
<td>-0.237</td>
<td>0.446**</td>
<td>-0.232</td>
<td>-0.225</td>
<td>-0.375</td>
</tr>
<tr>
<td></td>
<td>(0.188)</td>
<td>(0.180)</td>
<td>(0.216)</td>
<td>(0.433)</td>
<td>(0.205)</td>
<td>(0.500)</td>
</tr>
<tr>
<td>Akan</td>
<td>-0.432**</td>
<td>-0.196</td>
<td>-0.587***</td>
<td>0.101</td>
<td>-0.291</td>
<td>0.202</td>
</tr>
<tr>
<td></td>
<td>(0.185)</td>
<td>(0.190)</td>
<td>(0.221)</td>
<td>(0.430)</td>
<td>(0.216)</td>
<td>(0.495)</td>
</tr>
<tr>
<td>Age in months</td>
<td>-0.118***</td>
<td>-0.129***</td>
<td>-0.120**</td>
<td>-0.114***</td>
<td>-0.123**</td>
<td>-0.130***</td>
</tr>
<tr>
<td></td>
<td>(0.016)</td>
<td>(0.015)</td>
<td>(0.018)</td>
<td>(0.033)</td>
<td>(0.017)</td>
<td>(0.040)</td>
</tr>
<tr>
<td>Age in months square</td>
<td>0.001***</td>
<td>0.001***</td>
<td>0.002***</td>
<td>0.001***</td>
<td>0.001***</td>
<td>0.001***</td>
</tr>
<tr>
<td></td>
<td>(0.000)</td>
<td>(0.000)</td>
<td>(0.000)</td>
<td>(0.000)</td>
<td>(0.000)</td>
<td>(0.000)</td>
</tr>
<tr>
<td>Household size</td>
<td>-0.004</td>
<td>-0.011</td>
<td>-0.026</td>
<td>0.012</td>
<td>-0.031*</td>
<td>0.052*</td>
</tr>
<tr>
<td></td>
<td>(0.017)</td>
<td>(0.017)</td>
<td>(0.018)</td>
<td>(0.043)</td>
<td>(0.018)</td>
<td>(0.030)</td>
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<tr>
<td>Female headed hh</td>
<td>0.087</td>
<td>-0.054</td>
<td>-0.122</td>
<td>0.658***</td>
<td>-0.129</td>
<td>0.056</td>
</tr>
<tr>
<td></td>
<td>(0.121)</td>
<td>(0.123)</td>
<td>(0.142)</td>
<td>(0.246)</td>
<td>(0.145)</td>
<td>(0.272)</td>
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<tr>
<td>Durables index</td>
<td>0.150**</td>
<td>0.060</td>
<td>0.128</td>
<td>0.066</td>
<td>0.039</td>
<td>0.093</td>
</tr>
<tr>
<td></td>
<td>(0.076)</td>
<td>(0.063)</td>
<td>(0.081)</td>
<td>(0.175)</td>
<td>(0.070)</td>
<td>(0.149)</td>
</tr>
<tr>
<td>Mother’s height</td>
<td>0.027***</td>
<td>0.032***</td>
<td>0.023**</td>
<td>0.054***</td>
<td>0.040***</td>
<td>0.040***</td>
</tr>
<tr>
<td></td>
<td>(0.009)</td>
<td>(0.010)</td>
<td>(0.010)</td>
<td>(0.013)</td>
<td>(0.011)</td>
<td>(0.019)</td>
</tr>
<tr>
<td>Mother’s years of education</td>
<td>0.005</td>
<td>-0.010</td>
<td>0.006</td>
<td>-0.009</td>
<td>-0.015</td>
<td>-0.021</td>
</tr>
<tr>
<td></td>
<td>(0.013)</td>
<td>(0.012)</td>
<td>(0.016)</td>
<td>(0.021)</td>
<td>(0.014)</td>
<td>(0.025)</td>
</tr>
<tr>
<td>Father’s years of education</td>
<td>-0.008</td>
<td>-0.002</td>
<td>-0.001</td>
<td>-0.041**</td>
<td>0.004</td>
<td>-0.016</td>
</tr>
<tr>
<td></td>
<td>(0.011)</td>
<td>(0.010)</td>
<td>(0.013)</td>
<td>(0.021)</td>
<td>(0.012)</td>
<td>(0.029)</td>
</tr>
<tr>
<td>Mother’s age</td>
<td>0.008</td>
<td>0.012*</td>
<td>0.010</td>
<td>0.021</td>
<td>0.019**</td>
<td>-0.005</td>
</tr>
<tr>
<td></td>
<td>(0.006)</td>
<td>(0.007)</td>
<td>(0.007)</td>
<td>(0.016)</td>
<td>(0.007)</td>
<td>(0.014)</td>
</tr>
<tr>
<td>Observations</td>
<td>1080</td>
<td>1040</td>
<td>833</td>
<td>197</td>
<td>811</td>
<td>178</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.224</td>
<td>0.241</td>
<td>0.232</td>
<td>0.428</td>
<td>0.247</td>
<td>0.345</td>
</tr>
</tbody>
</table>

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Note: OLS estimates. Standard errors are adjusted for clustering at the household level. Pooled GLSSI and GLSSII. Rural sample. Children aged 0 to 60 months. Young is defined as born in 1985 or after. Each regression also includes birth year fixed effects, region of residence fixed effects, a wave dummy, and dummies for religion of the household head.
• Are our results driven by *ethnic differences in growth patterns*?

• Use data from the Demographic Health Surveys (DHS)
  o 1998, 2003, and 2008 DHS, several years after the reform
  o Check if the same “convergence” is observed for younger cohorts
Height-for-age z-scores by year of birth, gender, and ethnicity, DHS data

DHS 1998

DHS 2003

DHS 2008
Main messages from empirical analysis

— Traditional inheritance practices matter for the intergenerational transmission of human capital

— Nutrition considered complementary to land inheritance

  ▪ In a separate paper (La Ferrara and Milazzo, forthcoming), we find that education is a substitute for land inheritance

    o On average, Akan boys exposed to the reform received 0.9 less years of education (only among landed households and no effect among girls)
Final messages

• Traditions, custom, social norms affect the people’s behavior, decisions, nutrition
  – Interventions may have unintended effects bc of the social context
  – Evidence that norms can change rapidly: the media (La Ferrara, 2016), role models (India pradhan, Beaman et al, 2010, 12), availability of job opportunities (Jensen, 2012; Heath and Mobarak, 2015; others)
  – More rigorous evidence needed specifically on how to change norms leading to undernutrition

• Nutritional interventions
  – Mixed results of different interventions: Bhutta (2013), Galasso and Wagstaff (2016)
  – Intervene early (first 1000 days from conception) and for prolonged periods
...Thank you!
Appendix slides
• We focus on adults and estimate the year to year difference in education across ethnicities.
• Parallel trend for those born before 1974, reduction in education among Akan boys born after 1974, who were starting secondary education at the time of the reform.
• On average, Akan boys exposed to the reform received 0.9 less years of education.
  o only among landed households and no effect among girls.
Matrilineal system and inheritance

[Diagram showing a matrilineal family structure with labels for males and females, and the head of the family indicated.]
Table A.3  Summary statistics, children aged 0-60 months by gender and ethnicity

<table>
<thead>
<tr>
<th></th>
<th>All</th>
<th>Males</th>
<th></th>
<th>Females</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>St. dev</td>
<td>N.</td>
<td>Mean</td>
<td>St. dev</td>
<td>N.</td>
<td>Mean</td>
<td>St. dev</td>
</tr>
<tr>
<td>Akan</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Haz</td>
<td>0.39</td>
<td>0.49</td>
<td>2261</td>
<td>1.00</td>
<td>0.00</td>
<td>436</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Height</td>
<td>-1.22</td>
<td>1.51</td>
<td>2261</td>
<td>-1.43</td>
<td>1.45</td>
<td>436</td>
<td>-1.18</td>
<td>1.58</td>
</tr>
<tr>
<td>Mother’s height</td>
<td>84.97</td>
<td>14.15</td>
<td>2261</td>
<td>84.47</td>
<td>13.24</td>
<td>436</td>
<td>85.89</td>
<td>14.66</td>
</tr>
<tr>
<td>Father’s height</td>
<td>157.84</td>
<td>7.00</td>
<td>2161</td>
<td>157.33</td>
<td>6.86</td>
<td>412</td>
<td>158.40</td>
<td>7.37</td>
</tr>
<tr>
<td>HH head’s height</td>
<td>167.00</td>
<td>7.75</td>
<td>2175</td>
<td>165.14</td>
<td>7.80</td>
<td>422</td>
<td>167.93</td>
<td>7.65</td>
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<tr>
<td>Female</td>
<td>0.49</td>
<td>0.50</td>
<td>2261</td>
<td>0.00</td>
<td>0.00</td>
<td>436</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Age in months</td>
<td>32.84</td>
<td>18.97</td>
<td>2261</td>
<td>32.26</td>
<td>18.97</td>
<td>436</td>
<td>33.16</td>
<td>19.29</td>
</tr>
<tr>
<td>Age in years</td>
<td>2.46</td>
<td>1.67</td>
<td>2261</td>
<td>2.35</td>
<td>1.66</td>
<td>436</td>
<td>2.53</td>
<td>1.70</td>
</tr>
<tr>
<td>Father is farmer</td>
<td>0.77</td>
<td>0.42</td>
<td>2253</td>
<td>0.70</td>
<td>0.46</td>
<td>434</td>
<td>0.82</td>
<td>0.38</td>
</tr>
<tr>
<td>HH owns land</td>
<td>0.81</td>
<td>0.39</td>
<td>2149</td>
<td>0.79</td>
<td>0.41</td>
<td>427</td>
<td>0.81</td>
<td>0.39</td>
</tr>
<tr>
<td>HH size</td>
<td>7.07</td>
<td>3.63</td>
<td>2228</td>
<td>6.28</td>
<td>3.03</td>
<td>429</td>
<td>7.53</td>
<td>3.91</td>
</tr>
</tbody>
</table>

(continues)
### Table 1: Descriptive Statistics by Gender and Ethnicity

<table>
<thead>
<tr>
<th></th>
<th>All</th>
<th>Males</th>
<th>Non-Akan</th>
<th>Akan</th>
<th>Non-Akan</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>St. dev</td>
<td>N.</td>
<td>Mean</td>
<td>St. dev</td>
</tr>
<tr>
<td>Female-headed HH</td>
<td>0.13</td>
<td>0.34</td>
<td>2228</td>
<td>0.25</td>
<td>0.43</td>
</tr>
<tr>
<td>Mother’s age</td>
<td>31.07</td>
<td>7.90</td>
<td>2206</td>
<td>30.55</td>
<td>7.42</td>
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<td>Father’s age</td>
<td>40.70</td>
<td>12.20</td>
<td>1957</td>
<td>38.34</td>
<td>10.80</td>
</tr>
<tr>
<td>HH head’s age</td>
<td>39.69</td>
<td>12.11</td>
<td>2228</td>
<td>36.91</td>
<td>10.57</td>
</tr>
<tr>
<td>Durables index</td>
<td>−0.34</td>
<td>0.67</td>
<td>2228</td>
<td>−0.27</td>
<td>0.63</td>
</tr>
<tr>
<td>Mother’s eduysrs</td>
<td>2.07</td>
<td>3.72</td>
<td>2255</td>
<td>3.41</td>
<td>4.27</td>
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<tr>
<td>Father’s eduysrs</td>
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<td>5.08</td>
<td>2250</td>
<td>6.78</td>
<td>4.82</td>
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<tr>
<td>HH head’s eduysrs</td>
<td>3.87</td>
<td>4.81</td>
<td>2261</td>
<td>5.85</td>
<td>4.77</td>
</tr>
<tr>
<td>Muslim</td>
<td>0.12</td>
<td>0.32</td>
<td>2261</td>
<td>0.08</td>
<td>0.27</td>
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<td>0.49</td>
<td>0.50</td>
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<td>0.68</td>
<td>0.47</td>
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<td>Animist</td>
<td>0.32</td>
<td>0.47</td>
<td>2261</td>
<td>0.14</td>
<td>0.35</td>
</tr>
</tbody>
</table>

**Note:** Pooled GLSSI and GLSS II. Rural sample.