Fertility in rural Senegal: a “mode of production-oriented” pattern?

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Background

- Fertility transition in Africa: slower than everywhere
Background

- Fertility transition associated to economic development and modernization (modern education, socioeconomic status, ...)
- Most of change in urban context
What do we know?

- Economic & sociocultural factors of fertility behaviours (direct and indirects)

- Institutional approach (*Poirier et Piché, 1995*)
  - Family structure, kinship systems, social groups, labor market, inheritance rules and land structure to be investigate in a historic view
Operationalisation

- Few historical data + holistic information on economical, social and environmental organisation of households

- **Wealth index (DHS)**: proxy for household socioeconomic level
  - → negative relation between wealth and fertility

- **Education**
  - → negative relation between wealth and fertility
DSS data : an opportunity

- DSS data (older) : historic data + capitalization of pluridisciplinar research
- Niakhar 1964-2004
  - Impacts of agricultural crisis on fertility through marriage and migrations

Delaunay et al, 2006. La transition de la fécondité en milieu rural d’Afrique sahélienne : les apports d’une démarche longitudinale et institutionnelle
Cahiers québécois de démographie
Vol. 35, no 1, printemps 2006, p. 27-50
Local context

- High demographic growth
- Land pressure
- Peanuts crisis
  → Diversification of agricultural practices (meat production, watermelon, vegetables)
  → Diversification of activities through temporary migrations
- Urbanization of 2 villages
  - Electricity
  - Small business
- Schooling
Hypothesis

- The household’s mode of production is one of the driving forces of fertility change.
Hypothesis

Family farming

Numerous children

Meet production

Market gardening
Watermelon
...

Numerous children

Fewer children

Transportation
Electricity
Urbanization
→ Urban labor
→ small business
→ ouvrier

Recent adaptations

Non Agriculture
Methodology

- How to measure household mode of production?
- No specific survey on activities
- But data on goods and amenities owned by households
  - Goods from modernization and urbanization
  - Goods from farming system
## Economic indicators (2003)

<table>
<thead>
<tr>
<th>Modern wealth index</th>
<th>Farming wealth index</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proportion of rooms with straw roof</td>
<td>Cart</td>
</tr>
<tr>
<td>Proportion of rooms with iron roof</td>
<td>Horse</td>
</tr>
<tr>
<td>Proportion of rooms with banco floor</td>
<td>Seed drill</td>
</tr>
<tr>
<td>Proportion of rooms with cement floor</td>
<td>hoe</td>
</tr>
<tr>
<td>Proportion of rooms with cement wall</td>
<td>husker</td>
</tr>
<tr>
<td>Proportion of rooms with cement wall</td>
<td>Poultry</td>
</tr>
<tr>
<td>Television</td>
<td>Small livestock (goat, sheep)</td>
</tr>
<tr>
<td>Mobile phone</td>
<td>Livestock</td>
</tr>
<tr>
<td>Gaz</td>
<td>Meat production</td>
</tr>
<tr>
<td>Solar energy</td>
<td></td>
</tr>
<tr>
<td>Private tap water</td>
<td></td>
</tr>
<tr>
<td>Private toilets</td>
<td></td>
</tr>
</tbody>
</table>
Household wealth index

- Principal component analysis
- Hierarchical clustering

<table>
<thead>
<tr>
<th></th>
<th>modern wealth</th>
<th>farming wealth</th>
</tr>
</thead>
<tbody>
<tr>
<td>very poor</td>
<td>67.95</td>
<td>8.18</td>
</tr>
<tr>
<td>poor</td>
<td>17.55</td>
<td>30.13</td>
</tr>
<tr>
<td>rich</td>
<td>14.49</td>
<td>61.69</td>
</tr>
</tbody>
</table>
Fertility level

TFR

[Graph showing the trend of TFR from 1984 to 2014, with a steady decrease over the years.]
Age fertility rates by period
Education – 2009-14

TFR

primary
sec+
none

Fertility levels & modern wealth – 2001-2005

The graph shows the fertility levels of women in different age groups (15-19, 20-24, 25-29, 30-34, 35-39, 40-44, 45-49) categorized by economic status (very poor, poor, rich). The y-axis represents the number of children, and the x-axis represents age groups.

- **Very Poor**: The fertility rates peak in the 25-29 age group, with a peak of approximately 300 children. The rates decline sharply after this age group.
- **Poor**: The fertility rates also peak in the 25-29 age group, but at a slightly lower rate compared to the very poor, with approximately 250 children.
- **Rich**: The fertility rates peak in the 20-24 age group, with approximately 150 children, and they remain relatively stable compared to the other categories.

The bar chart on the right indicates the average number of children in each category:
- Very poor: 6.77 children
- Poor: 6.58 children
- Rich: 5.69 children

The graph and bar chart together illustrate how fertility levels are influenced by economic status and age.
Fertility levels & farming wealth – 2001-2005

The graph shows the trend of fertility levels across different age groups for three categories: very poor, poor, and rich. The x-axis represents different age groups: 15-19, 20-24, 25-29, 30-34, 35-39, 40-44, and 45-49. The y-axis represents the number of children. The bars on the right side of the graph indicate the average number of children for each category: very poor (5.84), poor (6.33), and rich (6.76).
## Multivariate analysis

<table>
<thead>
<tr>
<th>Variables #</th>
<th>Period 2001-2005</th>
</tr>
</thead>
<tbody>
<tr>
<td>education (none)</td>
<td></td>
</tr>
<tr>
<td>Primary</td>
<td>0.86***</td>
</tr>
<tr>
<td>Secondary+</td>
<td>0.54***</td>
</tr>
<tr>
<td>Modern wealth index (continuous)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.76***</td>
</tr>
<tr>
<td>Farming wealth index (continuous)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.23***</td>
</tr>
</tbody>
</table>

- Significant negative effect of education and modern wealth on the risk of having a child,
- Significant positive effect of farming wealth on the risk of having a child
Conclusion

- Big interest in following changes in household socio-economic organization indicators
- Modern/farming wealth: interesting results to be confirmed with the 2014 survey.
- Individual data on activities should be added in routine data collection → improve analytical power to analyse all behavioural changes (reproductive as well as health behaviours)