

Wrong Time to be Born?

How Peripartum Timing Affects Agricultural Labor, Productivity, and Child Health in Africa

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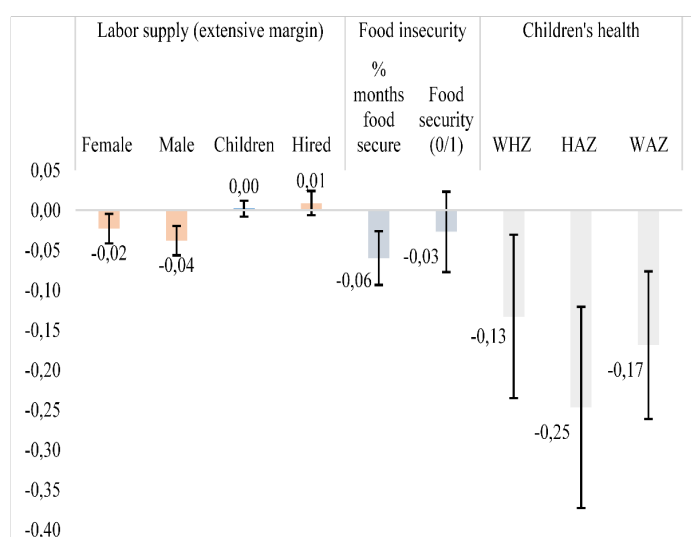


Births in peak farming season reduce labor supply, cut yields, and worsen food insecurity and child malnutrition.

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Topic at a Glance

In rural Africa, agriculture employs the majority of the workforce and remains largely rainfed. The timing of pregnancy and child-birth relative to agricultural calendar, especially for the main crop, has potential implications for both farm productivity and maternal health. Pregnancy (especially in the third trimester) and the immediate postpartum period substantially reduce women's capacity for physically demanding work. The trade-off tips towards reduced labor supply, which affects agricultural productivity and children's health.



Caption: Effect of peripartum coinciding with the maize growing season in sub-Saharan. Data comes from Ethiopia, Malawi, Nigeria, and Tanzania. Labor supply is the extensive margin.

New Insights

When peripartum, the period spanning late pregnancy through early postpartum, coincides with peak agricultural labor demands, women face a difficult choice: either reduce labor input, risking lower yields and food insecurity, or maintain strenuous work levels that may harm maternal and child health. Despite the obvious importance of this issue, rigorous evidence on how peripartum timing affects rural households has been lacking. This brief presents findings from a multi-country study using longitudinal data from Ethiopia, Malawi, Nigeria, and Tanzania to quantify the effects and identify clear policy pathways for intervention.

Using two-way fixed effects models that exploit within-household variation in birth timing (which we show is largely uniformly distributed) across four African countries, we find that the coincidence of peripartum and the maize growing season leads to the following:

- At the extensive margin (whether one works in agriculture), the likelihood of female labor force participation in agriculture declines by 2.3 percentage points (pp) while likelihood of male labor force participation also falls by 3.8 pp, suggesting household labor reallocation toward domestic and caregiving activities rather than compensatory increases in male agricultural labor.
- The intensive margin effects (hours worked) are even more pronounced. Women experiencing peripartum during the growing season supply 39 fewer hours per week of agricultural labor, while men reduce labor by 51 hours per week.
- In Malawi, where women contribute 50% of agricultural labor and perform critical tasks like weeding and fertilizer application, peripartum during the growing season reduces maize yields by 170 kg per acre (approximately 8% of mean yield).
- Households experiencing peripartum issues during the growing season report 0.58 additional months of food shortage in the following year—a 15% increase that represents substantial welfare loss for subsistence farmers with limited savings and poor market

access.

The cumulative effect of these results (labor losses, reduced yields, food insecurity, and poor dietary quality) manifests in worse child health outcomes. Children born during the maize growing season exhibit 0.13-0.25 standard deviation lower anthropometric Z-scores across weight-for-height (WHZ), height-for-age (HAZ), and weight-for-age (WAZ) measures. At the extensive margin, these children face a 3.3 percentage point higher probability of stunting (HAZ < -2). This is particularly concerning because stunting reflects chronic nutritional deficits during critical growth periods and has well-documented long-term consequences for cognitive development and lifetime earnings. The effects are concentrated in male-headed households, where we observe the largest impacts on both HAZ (0.31 SD decline) and WAZ (0.20 SD decline). Nigeria shows especially large effects—peripartum during peak season reduces HAZ by 0.46 SD and WAZ by 0.43 SD, while harvest season births improve HAZ by 0.71 SD. This swing of over 1.0 SD in HAZ represents a massive differential in child development trajectory based purely on birth timing.

In contrast to the harmful effects of growing season births, peripartum during the harvest season demonstrates protective effects on child health. HAZ increases by 0.22 standard deviation and the probability of stunting falls by 6 percentage points for children born during harvest periods. This beneficial effect operates through multiple channels: (1) births occur when food availability and dietary diversity are substantially better, (2) harvest work is less time-sensitive than growing season operations and can be delayed without major productivity consequences, and (3) households can more readily hire labor during harvest when cash and in-kind payment options are available from harvested crops.

Policy Recommendations

Our findings point to clear policy interventions that could improve both labor market outcomes and child health by helping households avoid peripartum timing that coincides with peak agricultural labor demands:

1. **Expand Access to Modern Contraceptives with Agricultural Calendar Awareness:** Rural family planning programs should explicitly incorporate agricultural timing considerations. Health extension workers should provide reproductive health education that addresses seasonal agricultural labor demands, helping couples make informed choices about pregnancy timing. Expanded access to affordable modern contraceptives in rural areas, particularly during post-harvest periods when households have more disposable income, could enable strategic birth spacing that avoids peak agricultural seasons.
2. **Provide Targeted Agricultural and Nutritional Support During Vulnerable Periods:** For households that do experience peripartum during peak season, targeted interventions could mitigate

negative impacts. These might include: (a) subsidized access to labor-saving technologies or hired labor during peripartum, (b) nutritional supplementation programs for pregnant women and newborns timed to the lean/growing season, (c) conditional cash transfers to offset income losses during this period, and (d) food distribution programs or market access improvements during lean season months.

3. **Invest in Agricultural Development to Reduce Labor Intensity:** More fundamentally, agricultural development strategies that reduce peak season labor intensity could yield substantial co-benefits for maternal and child health. This includes: (a) promoting mechanization and labor-saving technologies for time-sensitive operations like weeding, (b) improving access to agricultural inputs that reduce labor requirements, (c) diversifying cropping systems to spread labor demands across seasons, and (d) developing rural labor markets so households can more readily hire external workers during peak periods.

4. **Integrate Maternal Health and Agricultural Extension Services:** Currently, maternal health services and agricultural extension operate in silos. Integration could help: (a) agricultural extension agents identify pregnant women during peak seasons and connect them with health services, (b) health workers understand agricultural calendar constraints when scheduling prenatal visits and providing advice, and (c) coordinate the delivery of both agricultural support and maternal health interventions to vulnerable households.

From a labor economics perspective, these findings demonstrate how biological and agricultural production cycles interact to create binding constraints on household labor supply with cascading welfare effects. The inability of households to smooth consumption or hire replacement labor during peak periods highlights market failures that policy should address.

Limitations

While we did our best to address issues of endogeneity and showed that timing of birth is not skewed towards one season, there is need to build more robust evidence on this issue and understand how different factors interact to affect child outcomes. Potentially, a randomized controlled trial where some women are incentivized to have children in season, then compared to the others.

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