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Selling early to pay for school in Malawi

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1 | Introduction

In markets across sub-Saharan Africa, the nominal prices of some crops increase by as much as 50-100% from their harvest-season trough to their peak in the lean season (Burke, 2014; Kaminski, Christiaensen and Gilbert, 2014). These price cycles are regular and partly predictable, so they offer farmers profitable opportunities for inter-temporal arbitrage. Those who can afford to wait to sell their crops until prices rise during the lean season enjoy returns that are often better than what savings groups or other financial mechanisms can provide.

This paper demonstrates that short-term expenditure needs force poor farming households to sell their crops earlier than would be optimal, given the large increases in crop prices over the 6-8 months post-harvest. The paper uses a natural experiment in Malawi. In 2010, the school calendar switched from a December start date to a September start date. Although there is no primary school tuition in Malawi, households contribute to school expenses and parent-teacher associations, and incur substantial out-of-pocket costs for supplies and uniforms. The average total cost for primary school is 1,657 MWK (11.43 USD) per student across all schools, and 719 MWK (4.96 USD) in public schools. The calendar change required households with primary school chil-

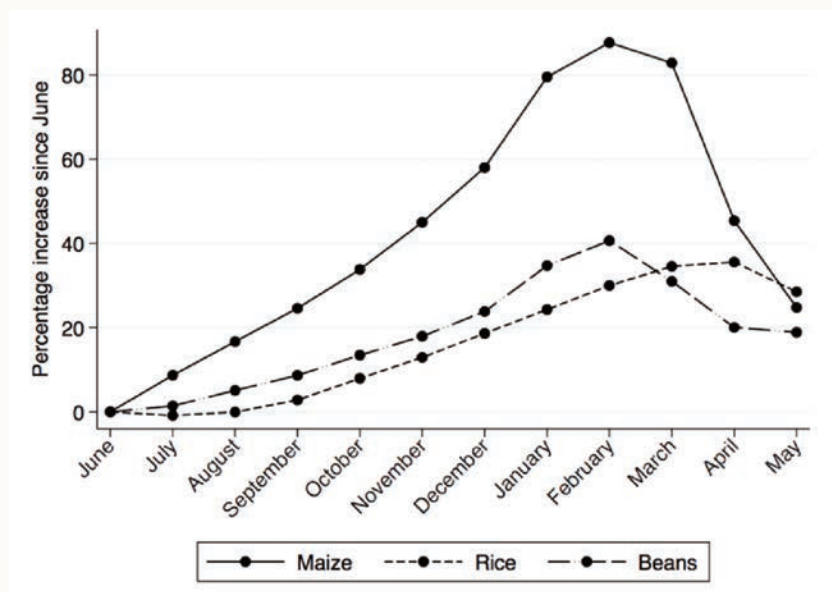
dren to pay school-related expenses three months earlier than in 2009, and four months earlier than the January start date that families had been accustomed to for 15 years prior to that. Because the main harvest season in Malawi is in May and June, the change in the school calendar introduced a sharp change in the timing of school-related expenses relative to the crop price cycle. As such, this calendar adjustment provides an opportunity to study the impact of a large-scale, exogenous, predictable change in the timing of expenditures on the timing of household crop sales.

Figure 1 plots the average monthly percentage changes in the prices of maize, rice and beans, relative to the most recent June (which represents the harvest season price). On average, maize prices in February are more than 80% above the price in June. The prices of rice and beans are 30-40% higher than the June price, at their peak. The implication of figure 1 is that households that are induced to sell early by the school calendar change forego the substantial increase in profits they would enjoy by delaying sales. The expected increase in crop prices from September to December is estimated to be 25%, taking into account potential crop depreciation during three additional months of home storage.

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Figure 1 Average intra-annual maize, rice and bean price cycles, % increase since June, 1999-2012.



Source: Author's calculations using data from Malawi Ministry of Agriculture.

2 | Methods

Using the 2010-2011 wave of the Third Malawi Integrated Household Survey (IHS 3) collected by the National Statistical Office, the author compares the cumulative value of crop sales through the end of August 2009 with the cumulative value of crop sales through August 2010. The calendar change should only affect households that lack the financial means to pay school fees earlier without selling crops, and that have school-aged children. Therefore, the author focuses on the effect of the calendar change on households below the poverty line, and allows the effect of the calendar change on crop sales to vary with the number of primary school children in the household.

In additional analyses, the paper examines the time path of crop sales from August to February (again comparing 2009 to 2010). The between-year effect of the calendar change by December, when households in 2009 catch up to 2010 households, and turns negative by February. The positive effect in the early months is from 2010 households selling crops earlier to pay for school. The negative effect in February is from the reduction in the cumulative value of total crop sales over the season, due to the early selling of some crops at lower prices.

The author uses additional data sets – the Demographic and Health Surveys from Malawi, and a panel subsample of the IHS 3 households that was re-interviewed in 2013 – to investigate whether education outcomes improved after the calendar change.

3 | Key Findings

Poor households sell crops earlier to meet schooling costs. In 2010, households below the poverty line sold crops at a rate of 1,271 MWK more per school-aged child than in 2009, as measured through the end of August. This is remarkably similar to the per-child cost of school attendance (1,657 MWK). There is no corresponding effect for non-poor households, who would be expected to have the financial stability to avoid selling crops early. These results are robust to the inclusion or exclusion of various control variables, and to alternatives to the poverty line as a proxy for credit constraints.

By financing education costs through crop sales, households forego potential crop revenues of 318-589 MWK (2.20-4.21 USD) per child, which is similar to the

direct cost of sending a child to primary school for poor households. The author constructs back-of-the-envelope estimates of the indirect costs to these households from missing out on the crop price increases that occur in the final months of the year. Treating 25% as the expected return to delaying crop sales until the end of the year, the foregone revenue from the main estimate of the calendar change effect is equivalent to 318 MWK (2.20 USD). Using the estimated August effect from an alternate (triple difference) specification, expected foregone revenue is equivalent to 589 MWK (4.21 USD).

There is no evidence of increases in education quality as a result of the calendar change. Literacy among girls improved steadily both before and after the reform; for boys, it fell slightly after 2010. The average student-teacher ratio fell after 2010, but the number of classes held in temporary structures increased, and the coverage rate of school feeding programs decreased slightly. Furthermore, after 2010, per-child school payments by poor households grew much faster than those by the non-poor. This suggests that the policy may have had the desired effect of increasing contributions from those who previously paid the least. Yet, there is no indication that this led to increased enrollment. Enrollment grew faster in the six years before 2010 than in the five years after. Hence, while the paper cannot rule out that schools improved, there is little suggestive evidence that they did.

4 | Discussion

The financial fragility of poor households is revealed by their reliance on crop sales to finance even small outlays. Poor households were sufficiently liquidity constrained that they prefer to sell crops early and forego significant expected increases in crop values rather than use savings or other financial mechanisms to pay primary school costs. This may be partly due to the covariant nature of the expenditure

shock and its widespread effect on all households with primary school children. If the expenditure shock were idiosyncratic, affected households may have borrowed to finance expenditures at rates better than that charged by the crop market over the relevant period.

When households are living very near the edge of their financial capabilities, seemingly innocuous policy changes can have unintended consequences. The fact that the pressure to sell early came from an education policy change highlights the importance of considering policy spillovers in settings where households have limited ability to smooth expenditures over time. One of the government's reasons for moving school to September was to bring it closer to the harvest, thereby increasing the capacity for farming households to pay school costs. This is akin to the introduction of commitment devices that offer farmers the chance to pre-commit to investment at harvest time, thereby protecting their farming revenues from various forms of over-spending. The unintended consequence of the calendar change was to force some households to finance their payments at an annualized borrowing cost of over 100%, with little evidence of offsetting benefits. By making the earlier payments mandatory, the policy change reduced the real wealth of many poor households over the course of the year.

The broader lesson is that weak financial markets and highly seasonal crop prices combine to be especially detrimental for poor households. Access to inexpensive credit would allow households to finance their school expenditures at lower rates than those afforded by crop markets. Alternatively, better development of grain markets to dampen the severity of intra-annual price cycles would lower the penalty for selling early. In the absence of such changes, it is likely that both predictable and unpredictable expenditures will continue to force poor households to sell crops at prices well below those received by their wealthier counterparts, further deepening existing inequalities.

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