The Precarious Economic Lives of College Students in sub-Saharan Africa*

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Abstract

Investment in tertiary education in Africa, unlike richer settings, is often portrayed as inequitable and inefficient. Yet, though Africa will produce much of the world's future workforce, there is little information on college students' economic lives. Novel data from a Zambian flagship university show that students are highly financially vulnerable and food insecure, on par with the "ultra-poor." Because universities are typically urban, cash poor rural students struggle with high urban costs of living. Being allocated on-campus housing causes less financial vulnerability and better academic outcomes. Financially supporting African university students could promote both equity and efficiency.

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1 Introduction

With at or below replacement fertility in most other regions, the world's future labor force will come from sub-Saharan Africa (SSA). Under standard scenarios for 2050, Africa will account for nearly 80% of the growth in the global labor force (Pritchett, 2026), and by 2040, one in three people aged 18–25 will live in SSA (United Nations, 2024). Hence, understanding the barriers to tertiary education in SSA is critical not only because tertiary education is a key driver of structural change and domestic economic growth (Porzio et al., 2022; Mankiw et al., 1992; Jones, 2014; Hsieh et al., 2019), but also because tertiary education in SSA will be critical for the future global provision of skilled young people.

Tertiary education in SSA has been widely described as an elite system predominantly serving students from wealthy families (Salmi and Bassett, 2014; Darvas et al., 2017). The view that scarce public resources should not be directed to this population is treated as "common sense" among NGOs, multilateral organizations, and researchers (e.g, Mingat and Tan (1985) or Ilie and Rose (2018)). Yet, this view rests on thin evidence: nationally representative surveys rarely capture students who live away from home, and unlike in high-income settings, universities have limited administrative data.[1] It is also ripe for re-evaluation. With the successful implementation of free secondary school across the region (Lucas and Mbiti, 2012), tertiary enrollment has expanded rapidly, with gross enrollments as high as 20% in some countries (see Appendix Figure A1). As university enrollment expands in a region in which 68% of people live below $4.20 per day (Alfani et al., 2025), and the population is exceptionally rural (56%) and agricultural (48%), university students are increasingly drawn from cash-poor households who may struggle to finance life in expensive cities. These challenges may be especially acute for women, who face higher dropout rates and for whom the returns to education are particularly large (Heath and Jayachandran, 2018).

Using newly collected high-frequency survey data from 1,022 female undergraduates at the University of Zambia, supplemented with administrative records and nationally representative comparison samples, we provide, to our knowledge, the first detailed data on the financial lives of college students in SSA. Students are positively selected on average, but far from exclusively elite: 30% of fathers have primary education or less, and 25% grew up in traditional (mud) housing, a standard marker of poverty. They are also highly financially vulnerable: students rely on short-term high interest loans to meet daily expenses, worry frequently about money, and exhibit substantially worse mental health than both U.S. college students and the sub-Saharan African poor. Students report striking levels of deprivation while at school — 34% report fewer than two meals per day, compared to 10–14% among GiveDirectly-eligible households in Kenya or self-described very poor households in Zambia. The high-frequency data allow us to characterize how being at school affects

[1] Survey data are also nearly non-existent; J-Pal's Post-Primary Education initiative evidence tracker lists 66 studies that were funded by the program. Only four focus on college or university education, none of which are in SSA.

food insecurity. Students are dramatically more food secure precisely when they are at home on breaks and become insecure again once school is back in session. This pattern implies that food insecurity is not an artifact of time-invariant measurement error, or given the data cover two separate breaks during two distinct seasons (in January and July), seasonality unrelated to schooling. Rather, food insecurity appears to be caused by being at school as cash-poor rural households struggle to support students living in an expensive urban center.

Using near-random variation in the allocation of on-campus housing — a substantial financial benefit for which virtually all students apply — we find that housing reduces food insecurity and financial distress by roughly 0.2 standard deviations and increases the probability of passing all courses by 10–12 percentage points. For context, a year of education at UNZA costs the government approximately 156% of GDP per capita (Saeki et al., 2016), so even modest reductions in repetition can substantially offset the costs of financial support. Conservatively focusing solely on pecuniary returns and ignoring education's potential large positive externalities, non-pecuniary benefits, and inter-generational effects (Wantchekon et al., 2015; Vogl, 2014; Duflo et al., 2024b), the estimates imply a benefit-cost ratio of 3.3 and a marginal value of public funds of 6. These numbers are comparable with some of the most effective interventions in developing countries (Duflo et al., 2024a; Damon and Glewwe, 2007). Even larger gains are possible with relatively blunt, feasible targeting. With targeting, public investment nearly pays for itself in increased tax revenue, and benefit cost ratios almost double. In supporting tertiary students, particularly those from rural areas, the government may be able to target both current deprivation and high expected impact, in the spirit of Haushofer et al. (2025).

While there is a rich literature on financial aid and tertiary education in high-income settings (see Dynarski and Scott-Clayton (2013)), research on tertiary education outside of these settings has been more limited. The main exceptions are Latin America, where there is now a growing literature on the role of financial aid (Londoño-Vélez et al., 2020; Duryea et al., 2023; Londoño-Vélez et al., Forthcoming), and India (Borker, 2021; Sekhri, 2020; Sekhri et al., 2024). In contrast, most experimental work on post-secondary human capital in SSA focuses on vocational training and apprenticeships rather than university education (Brown et al., 2024; Alfonsi et al., 2024; Hardy et al., 2019). To our knowledge, there is no prior work documenting the financial lives of university students in SSA and virtually no work evaluating the returns to financial support for this population. The closest is Gurgand et al. (2023), which shows that, even in relatively rich South Africa, students who get access to loans are much more likely to attend university. Conceptually, because SSA is poorer, more rural, and more agricultural than other settings, it may face unique challenges. Students in our setting resemble cash-poor rural-to-urban migrants (Lagakos, 2020; Munshi and Rosenzweig, 2016; Morten, 2019) who lose access to subsistence safety nets and home production without yet earning the

returns to migration — a life-cycle poverty that is well known in richer countries but far more consequential when households are close to subsistence (Merfeld and Morduch, 2023).

While our data come from one university, the underlying conditions are common across SSA: agricultural employment is high, and the largest public universities in the 15 most populous SSA countries are all located in major urban centers (Appendix Table A1), exposing cash-poor students to high prices. Zambia's enrollment rate is not unusually high for the region, and reports from Tanzania, Nigeria, and Kenya point to similar patterns of financial distress and dropout among university students (Chanda, 2024; Mosenda, 2024; Ndu-Okeke, 2023; Otunga et al., 2021; Ukegbu et al., 2019).

2 Background and Data

2.1 The University of Zambia

The University of Zambia (UNZA) was founded in 1965 and is the oldest, largest, and most prestigious university in Zambia. The university enrolls roughly 30,000 undergraduate and graduate students across two campuses, both located in the capital city of Lusaka. All of the current Supreme Court justices in Zambia were educated at UNZA, as was every president born after 1945 (Judiciary of Zambia, 2025; Cabinet Office, Government of Zambia, 2024; Zambia National Assembly, 2025; Council on Foreign Relations, 2025). As UNZA is the most prestigious university in the country, most students — including the wealthy — are likely to attend UNZA over a private competitor.

Students are admitted to UNZA based on national exams, taken at the end of secondary school. Undergraduate tuition ranges from US$919-1072 per year, depending on course of study.[2] Once admitted, they can apply for "bursary" or "BC," which is a government loan program that provides tuition support while students are in school and is ostensibly paid back by students after graduation. In practice, the repayment rate is quite low, as the loan board has little ability to make anyone repay.[3] While there are technically three levels of bursary support (50%, 75% and 100%), nearly everyone who is granted bursary receives 100%. Full bursary covers tuition, as well as housing costs for students who are allocated housing on campus. If they are not allocated housing, they are given a housing voucher worth approximately US$149 for the school year, which covers $\sim$ 60% of housing costs for students without on-campus housing in our data. In addition, bursary students are allocated a "meal allowance" of US$29 per month, which students report is often delayed.

[2] All monetary values are converted from Zambian Kwacha to USD using the exchange rate in effect during our first baseline survey (26.1 ZMW per USD) (Bank of Zambia, 2026).

[3] This is based on conversations with the loan board in Zambia and is in line with reports in Saeki et al. (2016).

In our sample, 79% of students report being allocated bursary. In focus groups, many students report that they could not have attended university without a government bursary, and many reapply over several years if they are initially denied. Because Zambia lacks reliable methods to validate income reports, bursary is allocated based on the within-region ranking of test scores to ensure regional diversity. There are also preferences for students with documented disabilities. Students who are not granted a bursary in a given year can apply for private scholarships, pay tuition, or apply again in the following year.

2.2 Data

2.2.1 Survey of Female Undergraduates

As part of an ongoing, longer-term randomized controlled trial, we recruited 1,022 female UNZA undergraduates aged 18-25 on campus in September–October 2024; they completed a baseline survey on their smartphones. Thereafter, they received follow-up surveys roughly every two weeks via text, with small compensation and a data bundle for participation. Natal household characteristics were mainly measured at baseline, though some additional questions were added in a later survey. Time-varying financial and food security questions were asked on alternating surveys (every 4 weeks) to reduce fatigue. Attrition remained very low throughout (see Table B1). Appendix B provides further details on data collection and question wording.

In this paper, we either use survey rounds prior to the RCT treatment, from October 2024 to February 2025, or when examining how food security varies over time, control data-only up to August 2025. See Appendix B for an exact mapping between questions and survey rounds.

2.2.2 Administrative Data From UNZA

We obtain administrative data from UNZA on the survey students' academic outcomes (passed all courses, repeating some courses, repeating the year), which allows us to evaluate the effects of housing support on academic outcomes. We also augment these data with administrative data from an earlier UNZA sample studied by Bau et al. (2025). Those survey data did not collect housing variables, but the administrative data allow for a longer panel to measure how academic outcomes evolve after failing to pass a course since the sample was enrolled at UNZA in 2022-2023.[4]

[4]Under Zambian privacy laws, UNZA cannot share even anonymized student administrative data unless students have been consented to share it with the researchers.

2.2.3 Comparison Samples

We use two additional datasets to construct comparison samples to benchmark the socioeconomic status of UNZA students to other populations.

LCMS Zambia. To compare students with a representative sample of Zambian households, we use household survey data from the 8th Living Conditions Monitoring Survey (LCMS), collected by the Zambian Statistical Authority in July–August 2022. This nationally representative sample consists of 8,407 households across 420 randomly selected enumeration areas in all 10 provinces in Zambia. The survey collects information on general living conditions, food security, and education of household members.

Siaya County (GiveDirectly) Sample. For another comparison, we include data from a representative sample of households in Siaya County, Kenya. These data were collected as a baseline survey for Egger et al. (2022) and were used in part to determine eligibility for GiveDirectly, an unconditional cash transfer program. To be eligible for GiveDirectly transfers, participants had to live in a house with a thatched roof, observed directly by multiple surveyors in a county census. This criterion is used by GiveDirectly to target "extreme poverty," and in this sample, 66% of households were eligible. This provides a comparison to a population where there is a general consensus that households are poor, in need of assistance, and living close to the line of subsistence.

3 Descriptive Results

3.1 Natal Household Characteristics

In this section, we describe the characteristics of students' natal households and compare these to national statistics to better characterize the socioeconomic status of students enrolling in tertiary education. Panel (a) of Table A2 reports summary statistics about students' demographics, mainly from the baseline survey. Students are not universally financially advantaged: the average student shared their bedroom growing up with 2.7 individuals and 23% grew up in a home without electricity.[5]

In Figure 1 Panel (a), we report the distribution of years of education for fathers of UNZA students, overlaid with the distribution of years of education for household heads age 40–55 (approximately the same age as current students' fathers) from the LCMS. The distribution for UNZA fathers is shifted to the right, with considerably more mass at tertiary education (16 years). However, there is significant overlap between

[5]The data also reveal that we capture information from students at all of UNZA's academic divisions, though medicine is underrepresented since these students take most of their classes at a different campus in the same city.

the two distributions. The majority of students' fathers (71%) have not received tertiary education. Indeed, 41% of participant's fathers have not finished secondary school, and 30% have primary or less education. Assuming a participant completes her studies at UNZA, on average, she will attain 5 more years of education than her father did.

In Figure 1 Panel (b), we report the percent of UNZA students who grew up in traditional housing (either with thatched or improved roof) and those that self-report their household as poor compared to the percent of Zambian households. We focus on these measures of socioeconomic status because they were asked in both our survey and the LCMS. While UNZA students are somewhat more advantaged on average on these measures, a substantial fraction (76%) self-assessed their natal family as poor, and 25% grew up in a traditional house, a standard marker of poverty.

Altogether, Figure 1 shows that students at UNZA are positively selected relative to the overall population of Zambia, but not exclusively, or even mainly the children of the elite. Non-elite representation appears to be considerably higher than in U.S. elite schools, where only 18-20% of students come from the bottom 60% of the income distribution (Chetty et al., 2020).

3.2 Food Insecurity

Assessing natal household poverty may understate the deprivation students experience at UNZA. Relocating to the high-cost capital forces rural students into a cash economy, severing access to subsistence resources and network insurance (Munshi and Rosenzweig, 2016). Like migrant workers, their consumption may be strained by significantly higher food and housing prices.[6]

We now turn to more immediate measures of poverty faced by students at UNZA. In Figure 2 Panel (a), we report two measures of food insecurity: whether a student has had at least two meals per day in the past two weeks and whether they report that they eat meat "never" or "rarely." We find that 34% of the time, UNZA students report eating fewer than two meals per day in the previous two weeks. By comparison, even in households that self-identify as "very poor" in Zambia, only 14% of households report eating less than two meals per day. Likewise, in households that are eligible for GiveDirectly in Kenya, which the program describes as aimed at "households living in extreme poverty," 10% report not eating at least two meals per day. By this measure, university students are *more* food insecure than the poorest households in SSA. The pattern for eating meat is similar: 65% of students report eating meat "rarely" or not at all,[7] a higher rate than any comparison group except very poor Zambian households.[8]

[6]The cost of living in Lusaka is estimated to be 28% higher than the average across Zambia (Economic Research Institute, 2025)

[7]Vegetarianism by choice is *extremely* rare in Zambia.

[8]Because food security questions differ across surveys, we construct comparable measures. We classify LCMS households as "rarely" eating meat if they ate meat fewer than four times in the previous month, and GiveDirectly households if they did

These findings are consistent with qualitative evidence collected in interviews and focus groups with students on campus. Food prices, and the difficulty of affording food in Lusaka, came up repeatedly when asking students about their finances. Most students reported cutting down on meals as a primary coping strategy for financial difficulties. They also reported sticking to cheap foods, such as rice, nshima (a thick cornmeal porridge), eggs, and soy chunks, while forgoing meat, fish, and prepared meals. See Appendix Section C for quotes from students.

University can be a time of relative poverty even in rich countries, but in very poor countries, reduced consumption can push students to or below subsistence. In a US sample, only 7% reported cutting meals as a coping mechanism, versus 80% in ours (El Zein et al., 2019).

3.3 Financial Vulnerability

We also asked about financial constraints directly. Over half of students report taking out loans (excluding government tuition loans) in the last four weeks, in line with high indebtedness among the global poor (Banerjee and Duflo, 2007). Virtually no loans are from formal banks; students rely on friends (66%), mobile money loan apps (18%), and moneylenders (20%). Figure A2 illustrates the prevalence of loan advertisements on campus. Median monthly interest rates range from 7% to 20% depending on source (Figure 2 Panel (b)), and 96% of loans are due within two months. The rates are consistent with the lack of collateral and the high cost of short-term mobile credit in SSA (Gwer et al., 2019).

Figure 2 Panel (c) reports additional indicators of financial distress in the previous four weeks. Rates are striking: 90% could not arrange US$57 in an emergency, 65% are behind on housing expenses, and 41% had pawned or sold belongings.[9] Another 21% report having done something "they were not proud of" for money — terminology meant to euphemistically elicit transactional sex, a common coping strategy for young women in SSA (Dupas, 2011).

Finally, Figure 2 Panel (d) reports mental health measures using the PHQ-4, validated in young women in SSA (Materu et al., 2020). Using standard clinical cutoffs, 60% screen positive for anxiety and 52% for depression — rates substantially higher than among U.S. college students (Lipson et al., 2022) or poor populations in SSA (Carvalho et al., 2025). Separately, 63% and 58% reported being at least "quite a bit" worried about their future and finances, respectively.

not eat meat the previous day.

[9] In focus groups, students reported pawning laptops, smartphones, and even hot plates for cooking in order to make ends meet.

3.4 Food Security on Campus vs. at Home

We hypothesize that part of the reason students have such poor financial well-being at school is because many Zambian households are subsistence farmers who are cash poor even if they produce enough to eat.[10] Combined with significantly higher food prices in Lusaka, this could create food insecurity at school even for students whose natal families are not food insecure. To test this, we take advantage of our high-frequency survey and the fact that we continued surveying students when they were home on break. We collapse three indicators — whether a student had at least two meals per day, how often she eats meat (1=never to 5=almost every day), and how often she skips meals due to cost (1=never to 3=often, entered negatively) — into a single index following Anderson (2008).

Figure 3 shows this index over time, spanning periods on campus, home on break, and back on campus. Food security increases by more than half a standard deviation when students go home, and returns to baseline levels within weeks of returning to campus. The pattern replicates across both the inter-term break and the summer break. In Figure A3, we show that all three index components individually exhibit the same pattern. We take this as evidence that the poverty experienced by students is partly *induced* by the circumstances of their education, involving rural to urban migration.

4 Role of Housing Support

Motivated by the evidence that university students are poor and highly credit-constrained, we consider whether financial support may affect their outcomes, focusing on the effects of being assigned on-campus housing.

4.1 Background on On-Campus Housing & Allocation

Despite rapidly expanding enrollment, there has been little expansion in on-campus housing at UNZA since its founding in 1965. There are several sex-segregated dormitories that house undergraduates. Two students are formally assigned to a room, which is roughly 8 feet by 10 feet (pictured in Figure A2). In our sample, 18% of participants were assigned on-campus housing.

Being assigned housing is a large financial boon for students, and anecdotally, almost all eligible students apply. For those on bursary (79% of our sample), on-campus housing is free. For those not on bursary, the cost is $196 for the year, which is substantially lower than equivalent housing near campus. Students who are on bursary but are not assigned housing are given a "housing stipend" of the same amount, which is far

[10] In a qualitative interview, a rural adult explained that her monthly budget was only 10 Kwacha, saying: "It's just for buying salt, everything else is negotiable."

less than local rents (HELSB, 2024) and roughly half what students who are not assigned housing pay in our sample. Thus, being assigned housing is a considerable reduction in housing costs for all students. In addition, because of the high demand for on-campus housing, students who are assigned housing typically rent out space to classmates, fitting 4-8 students in each twin room, with 2 students in each twin bed and 4 more on the floor in the most crowded rooms. This can provide students with substantial extra income during the academic year. Based on focus groups with students, a space in a dorm rents for ∼US$200-300 per year, which can provide the student "landlord" with up to US$900 per year.

Conversations between the PIs and administrators suggest that housing is allocated based on the timing of applications and geographic area. Timing of application is quasi-random, as the dean announces applications are open at an unexpected moment, and students must receive this message and log on to apply. Since many apply within a short period, sorting within the small portion of the list that is likely to receive scarce housing may not be related to other characteristics. This is particularly likely because the assignment mechanism is not known to students or even most faculty, and students describe the process as opaque and akin to a lottery. Each province outside Lusaka has an allocation of housing slots that are given roughly by order of application until supply is exhausted (with the small number of international students and students with documented disabilities given priority) . Stratifying within geographic regions reflects university priorities, since housing is not meant to target girls who can commute, and birth province is an observable albeit imperfect proxy for financial need. However, we note that there are also anecdotes about students with particular connections being allocated housing ahead of the line. To help rule this out as a confounder, in addition to showing the sensitivity of estimates to socioeconomic controls, we will separately estimate treatment effects for students who are very unlikely to have connections. Students who are not allocated housing in one year can apply again in subsequent years, and once they are allocated housing, they can keep it until they leave UNZA. Thus, duration of study at UNZA and home district are causally predictive of allocation.

While assignment is not fully random, conditional on home district and cohort fixed effects, selection may be second-order if manipulation is limited, consistent with students' poor understanding of the allocation process. To evaluate whether this may be the case, in Table A3, we regress being assigned housing on a host of baseline demographic characteristics, conditioning on fixed effects for home district and age. We also include binary indicators for each of the twelve undergraduate schools at UNZA. None of the variables are statistically significant at even the 10% level, and the p-value of the joint F-test of all of the variables is 0.953. Given this, it is likely that the non-random components of the housing allocation mechanism are second-order. While we caution that conditional effects of housing on outcomes may not be fully causal, given the apparently limited degree of selection, they are likely useful for gauging the importance of financial support for students' outcomes.

4.2 Housing and Financial and Educational Outcomes

We estimate the effects of housing allocation on housing costs, financial vulnerability, and educational outcomes in Table 1. All columns control for district and cohort fixed effects, as we know these causally affect whether an individual currently has housing based on the assignment mechanism. In addition, in even columns, given that assignment may not be fully random even conditional on these controls, we use double lasso to select additional controls from all the demographic information that was pre-determined with respect to housing allocation. A full list of these controls appears in Panel A of Table A2, and double lasso is described in Chernozhukov et al. (2015).[11] In order to reduce measurement error in self-reported housing status, we asked about housing allocation in two separate surveys, and we instrument for a student saying they were allocated housing in the first survey with whether they said they were allocated housing in the second survey.

Columns 1–2 of Panel A of Table 1 regresses rent paid on housing allocation. Focusing on our preferred double-lasso specification, being allocated housing reduces rent by ZMK 1610 (US$62) per term relative to a mean of ZMK 3280 (US$126). In columns 3–4, the outcome is the total value of rent received over the same term; for the majority of students who don't receive rent payments, this is zero.[12] Students with housing take in ZMK 856 (US$33) more per term. In columns 5–6, we combine these numbers to measure a student's "net rent" (rent out−rent in). Students who are allocated housing pay ZMK 2519 (83%) less in net rent. Notably, the lasso-selected controls have little effect on the point estimates, and their inclusion does not systematically decrease their magnitude.

In Panel B of Table 1, we regress financial and academic outcomes on whether a student is allocated housing. In addition to our food security index, described above, we create an additional index for financial distress. For this index, the individual components are whether a student has pawned or sold belongings, taken out a loan, avoided healthcare due to costs, fallen behind on housing, or done something she is "not proud of" for funds. Both indices are normalized such that a higher score is a better outcome (more food security, less financial vulnerability). We find that students who are allocated housing score approximately 0.2-0.3 standard deviations better on both indices. Table A4 reports the results for the index components.

We next evaluate whether housing allocation affected participants' educational outcomes using administrative data on their outcomes at the end of the 2024 academic year. Students who were allocated housing (in 2024) were 9.9-12.1 ppt more likely to report passing all of their classes. Reassuringly, the inclusion of the lasso-selected controls slightly *increases* this point estimate, suggesting that the positive association between

[11] Intuitively, this procedure uses two lasso regressions to select controls. It selects the controls that are most predictive of treatment to improve balance and the controls that are most predictive of the relevant outcome to improve statistical power.

[12] Typically, only students who are allocated on-campus housing or who are subletting a flat or family home receive rent.

housing and passing courses is unlikely to be driven by omitted variable bias (Oster, 2019). Table A5 shows the effects on disaggregated academic outcomes in our survey data (Panel A) and the administrative data (Panel B). The increase in passing is driven by fewer students having to repeat classes in the subsequent year, and the estimates with the survey and administrative data are nearly identical, helping to validate the survey data's quality. Table A6 shows all the estimates are robust to including the full set of controls.

Table A7 estimates the effects of housing on passing classes based on two markers of disadvantage (grew up in traditional home and originating from a rural district). In both cases, the effect on the disadvantaged group is roughly 10 ppt higher (more than 2x as high). Changing the system to target benefits even very bluntly, along the lines of what is already used to target GiveDirectly transfers in Kenya, could deliver large improvements in academic outcomes. These results also help reassure us that the housing effects are not driven by connected students obtaining housing outside the official allocation mechanisms; if this were the case, we should not see a larger effect among the more disadvantaged students, who are very unlikely to be connected.

An alternative explanation is that living on campus is itself beneficial, independent of the financial value of housing. To test this, we examine outcomes for "squatters" — students who pay for space in an allocated student's dorm room (31% of our sample). These students live on campus but pay for the privilege rather than earning rental income. Table A8 shows that squatting is not significantly associated with improved financial outcomes or passing rates, suggesting that the financial value of housing, not campus residence per se, drives our results.

5 Cost-Effectiveness and Policy Implications

We now consider the cost-effectiveness of the financial aid equivalent to providing on-campus housing under different assumptions. We use estimates from the housing allocation to calculate the social benefit-cost ratio (BCR) and the marginal value of public funds (MVPF) metric of Hendren and Sprung-Keyser (2020) for equivalent financial support policies under relatively conservative assumptions. For social benefits, we only consider the present discounted value of wage increases from increased education. This is almost certainly an underestimate: it excludes non-pecuniary or intergenerational benefits, as well as any externalities from increasing the number of tertiary graduates, which both the macrodevelopment literature and the free secondary schooling experiment of Duflo et al. (2024b) indicate could be large.

In the spirit of the surrogate approach of Athey et al. (2025), for our calculations, we use a panel of administrative data for students who were freshmen at UNZA in 2019 (from the Bau et al. (2025) dataset) to calculate the probability distribution over years a student takes to complete UNZA (or dropout) condi-

tional on ever having to repeat courses, ever having to repeat a year, or neither (see Table A9 for specific distributions).[13] We estimate that housing allocation decreases the probability a student repeats courses by 10 ppt and repeats a year by 2.7 ppt (columns 2 and 3 of Table A5 Panel B) and assume a scholarship sized to match housing's financial effects would have the same effect. Using the empirical conditional probability distributions, we calculate the average present discounted costs, benefits, and tax revenues associated with repeating courses, repeating a year, or neither. The scholarship changes flows of benefits and costs by changing the probabilities students are in these categories. We assume a student receives the returns from the number of years of education she passes, while the government pays for the number of years she is actually at UNZA.[14] For government revenues, we assume students repay loans at the rate reported to us by the loan board (40% over 10 years with 0 interest) and pay VAT on purchases with imperfect compliance of 70%, which matches estimated rates of compliance in Zambia (PwC, 2025a; Alexeev and Chibuye, 2016).[15]

Table 2 reports the BCRs and MVPFs under a range of assumptions. Appendix D provides further details of the calculation. Our preferred estimate assumes the returns to tertiary education in SSA are 17.1% (as estimated by Gethin (2025)) and assumes an economic growth rate of 2%, in line with the twenty-year average in Zambia (World Bank, 2026). This implies a BCR of 3.28 and an MVPF of 5.99, on par with estimates for secondary scholarships for girls in Ghana (Duflo et al., 2024b). Notably, if loan repayment were universal, the MVPF would be infinite. That is, the program would pay for itself in terms of government revenue.

In Panel A, we explore the scenarios in which the aid is targeted by possible indicators of need: whether students grew up in a traditional home or in a rural district. Currently, the government does not target loans toward low-income students as they believe there is no reliable method to verify a student's household income, though district of origin is administratively known. Based on these estimates, even bluntly targeted financial aid based on either indicator would lead to a substantially higher BCR of ∼6 and much higher MVPFs (41-61).

Panel B reports estimates under more conservative assumptions: (i) a lower return to education (14% as in Duflo et al. (2024a) or 10%, the global average Mincerian returns to education unconditional on education type from Psacharopoulos and Patrinos (2018)), and (ii) if there is zero economic growth. The MVPF estimates are still relatively high when compared with social programs reported by Hendren and Sprung-

[13]The data are censored at 7 years at UNZA based on the last year for which administrative data were available. We conservatively assume that students in their 7th year graduate. If they instead dropout or stay longer, this would lead to higher MVPF and BCR estimates.

[14]For example, if a student takes 7 years to graduate, she receives the same returns to education as a student who takes 4 years, but the government pays for 7 years of education.

[15]This likely underestimates tax revenue effects since individuals with tertiary education are more likely to be in positions (e.g., working in the public sector) where they would comply with income taxes. Not including these effects leads to more conservative MVPF estimates. Our base estimate of wages for those with secondary education comes from the Zambian Labor Force Survey (ZamStats, 2023).

Keyser (2020), and the BCR is generally comparable with some of the most effective interventions (Damon and Glewwe, 2007). Row 7 of Panel B reports the estimates under the assumption that the true effect of housing on repetition of courses/a year is only half the estimated effect. This allows for the possibility that a substantial portion of the treatment effects are due to omitted variable bias, though this seems unlikely given the lack of observable correlates of housing allocation. Even in this very conservative scenario, the MVPF and BCR remain relatively high (2.5 and 2.0).

6 Conclusion

Our estimates highlight the scale of the market failure caused by the inability to borrow against future income from human capital investments for college students in SSA. This market failure is well-known in high-income settings and is typically resolved in those settings with government-subsidized student loans, highly subsidized public universities, or both. If anything, the situation is worse in SSA: the maximum government loan package does not provide enough to cover food and housing in addition to tuition, and the only private loans available to students charge monthly interest rates of 7–20%.

As tertiary enrollment expands and an increasing share of the world's young people live in SSA, creating a model of university education that works for non-elite students is critical. Our data suggest that college students in SSA are best understood as cash-poor migrants bearing substantial short-term costs for long-term gains, and that relatively modest financial support during this period could enhance both equity and efficiency.

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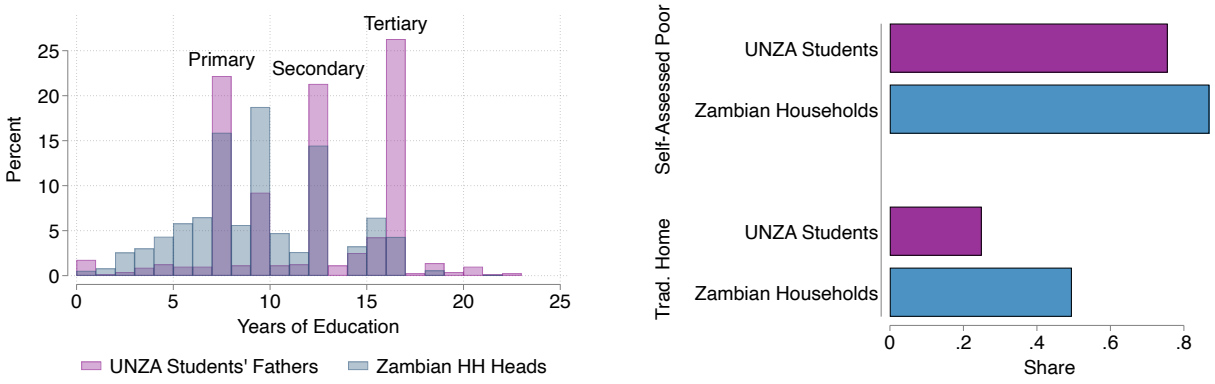
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7 Exhibits

Figure 1
Demographic Characteristics of UNZA Students Relative to Zambian Population

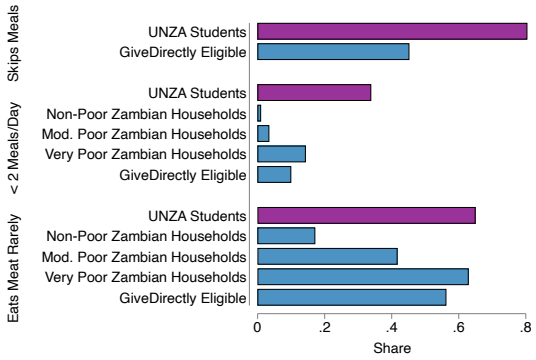


(a) Years of Education of Household Head

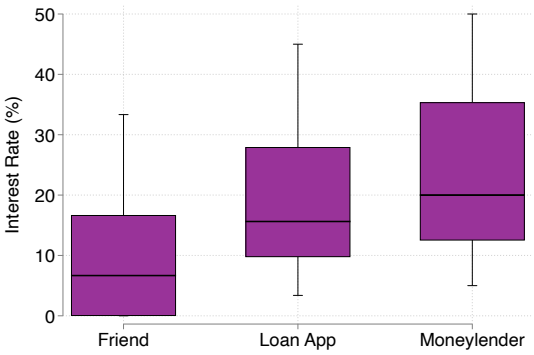
(b) Self-Reported Poverty and Housing Material

Notes: This figure shows the household characteristics of UNZA students (collected in survey 20) compared with a nationally representative sample of households with heads aged 40-55 (Zambian LCMS). Panel A shows the years of education of the fathers of UNZA students in purple and years of education for Zambian household heads aged 40-55 in the LCMS in blue. Panel B shows the fraction of students who report that they grew up in a household that was "moderately" or "extremely" poor and the percent of students who report having grown up in a traditional (mud) house, either with thatched or improved roof compared with the percentage of households with heads age 40-55 that report being "moderately" or "extremely" poor in the LCMS, or having a traditional (mud) house, either with thatched or improved roof.

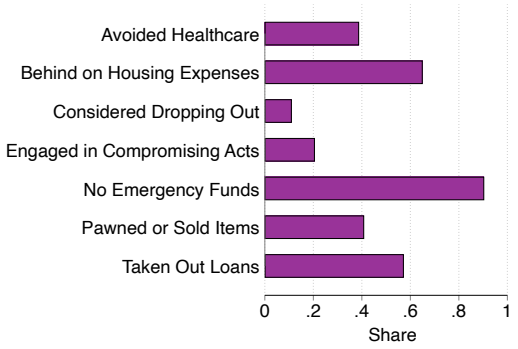
Figure 2
Living Conditions Among College Students



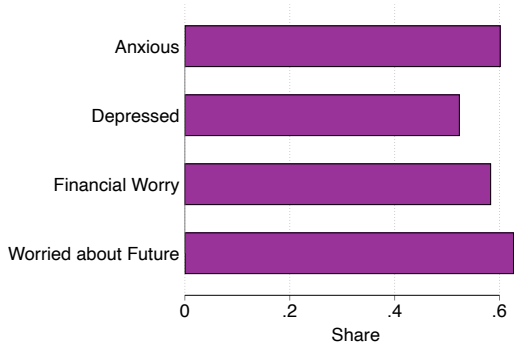
(a) Food Insecurity in Last 2 Weeks



(b) Monthly Interest Rates



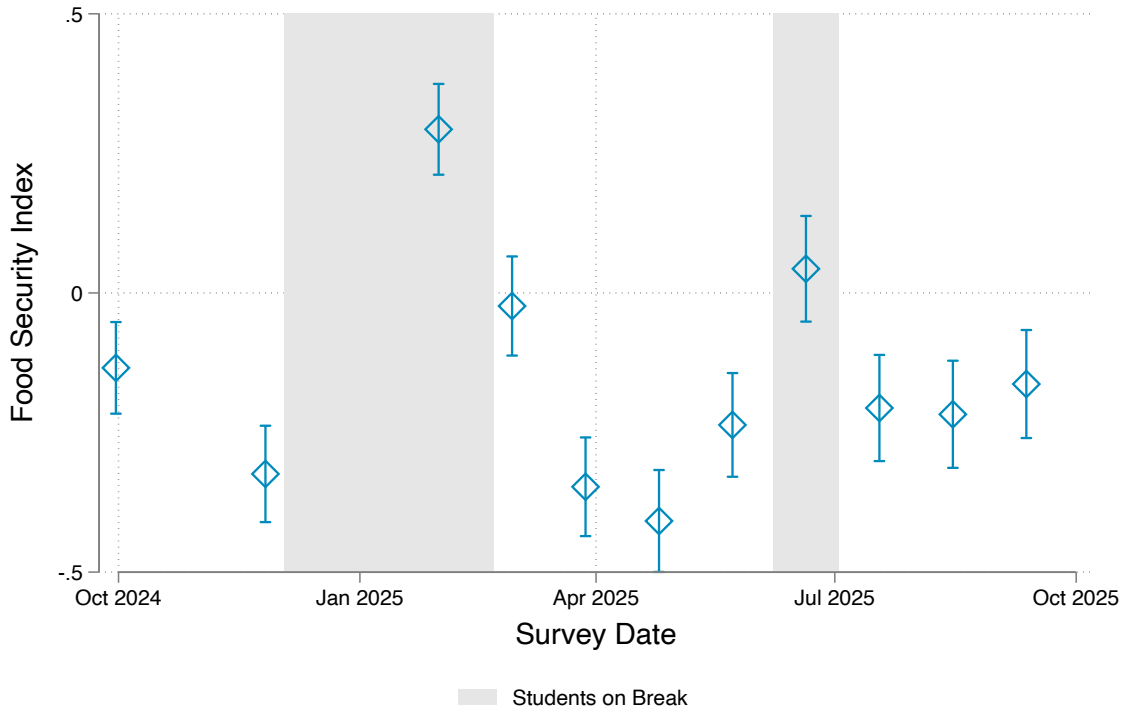
(c) Financial Vulnerability in Last 4 Weeks



(d) Mental Health in the Last 2 Weeks

Notes: This figure shows student financial vulnerability on a variety of measures from the UNZA student survey. Panel A shows measures of food security, compared to LCMS households (divided into self-reported categories of "not poor", "moderately poor" or "extremely poor"), as well as households eligible for GiveDirectly in Siaya County, Kenya (Egger et al., 2022). "Skips Meals" for the UNZA students is coded as 1 if they report skipping meals "sometimes" or "often" in the previous two weeks, and for Give Directly households is coded as 1 if they report that any adult member of the household has skipped any meals in the previous week. For the UNZA students, the time frame for having less than two meals per day was anytime in the last two weeks, for LCMS households it was a self-reported "normal day," and for GiveDirectly it was yesterday. "Eating meat rarely" translated to UNZA students saying they eat meat "rarely" in the past two weeks, LCMS households eating meat <3 times in the last month, and the GiveDirectly households eating no meat yesterday. Panel (b) reports monthly interest rates paid by our sample by source for the top three loan sources. The dark line is the median, the purple box spans the 25th to 75th percentiles, and the whiskers span the 5th to 95th percentiles. Panel (c) reports the share who report different coping mechanisms or proxies for financial vulnerability in the last 4 weeks, and Panel (d) reports the share reporting different mental health outcomes. Financial questions were asked every other survey with a 4-week recall period. Mental health questions were asked every other survey with a 2-week recall period. Data come from the first two pre-treatment surveys.

Figure 3
Food Security on Campus and at Home



Notes: This figure reports the index of food security by survey date. The index is created from students' answers to three questions: (1) whether they eat meat never, sometimes, or often, (2) whether they had eaten at least two meals every day for the past two weeks, and (3) whether they skipped meals because they could not afford to buy food never, sometimes, or often (entered inversely). Questions were asked about a 2-week recall period every four weeks and appeared on 11 surveys (1, 2, 3, 5, 7, 9, 11, 13, 15, 17, and 19). The gray shaded area represents the period when students were at home between terms. Since the later surveys overlap an experimental intervention, we only report measures from the control group.

Table 1
Housing Allocation and Financial and Educational Outcomes

Panel A: Rent						
	Rent Paid		Rent In		Net Rent	
	(1)	(2)	(3)	(4)	(5)	(6)
Allocated Housing	-1646.107***	-1610.486***	941.168***	856.023***	-2491.284***	-2519.257***
	(320.916)	(315.969)	(259.676)	(229.118)	(426.180)	(427.074)
LASSO Controls		X		X		X
Mean DV	3263	3286	274	258	3009	3032
N	956	906	1006	952	956	906

Panel B: Financial Vulnerability & Educational Outcomes						
	Food Security		Financial		Passed	
	(1)	(2)	(3)	(4)	(5)	(6)
Allocated Housing	0.240**	0.170*	0.373***	0.266***	0.099*	0.121**
	(0.094)	(0.089)	(0.098)	(0.097)	(0.055)	(0.054)
LASSO Controls		X		X		X
Mean DV	-0.180	-0.180	-0.275	-0.277	0.660	0.666
N	2008	1889	2008	1889	999	937

Notes: This table reports coefficients from a regression of outcomes of interest on whether a student reports having been allocated on-campus housing in the survey data, conditional on origin district and age fixed effects. To correct for measurement error, we instrument for reporting being allocated housing in survey 1 with reporting being allocated housing in survey 2. In Panel A, the outcomes are the reported rent paid in term 1 (Feb-June) in columns 1–2, the reported rent collected in term 1 in columns 3–4, and the "net rent" which is just rent paid minus rent collected in columns 5–6. All data in this panel come from survey 12. In Panel B, the outcomes are indices of food security (columns 1–2) and financial vulnerability (columns 3–4), as well an indicator variable for whether a woman passed her classes (columns 5–6). The full set of demographic controls available to be selected by the lasso estimator is shown in Panel A of Table A2. Food security measures were collected in surveys 1 and 2. For rent paid and food security, an observation is at the individual-survey level. Passing is measured using administrative data for the 2024 academic year, so an observation is at the individual level. Standard errors are clustered at the student-level in cases where there are multiple observations per student. Otherwise, they are heteroskedasticity robust.

Table 2
Benefit-Cost Ratios and MVPF

Panel A: Selected Samples

	Sample	MVPF	Benefit-Cost Ratio
(1)	Full	5.99	3.28
(2)	Trad. Home	41.18	5.82
(3)	Rural	60.68	6.08

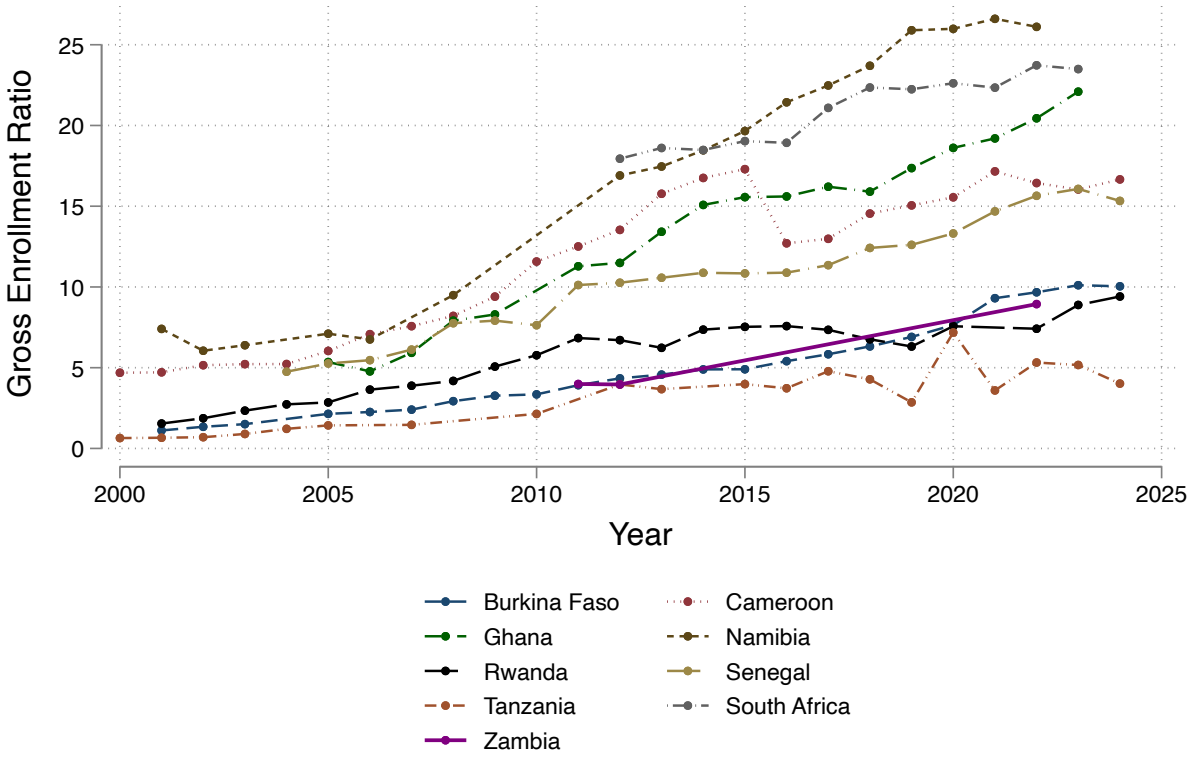
Panel B: Alternative Assumptions

	Relative Effect Size	Tert. Ed. Return	Growth	MVPF	Benefit-Cost Ratio
(1)	100%	0.171	0.02	5.99	3.28
(2)	100%	0.171	0.00	4.86	2.92
(3)	100%	0.140	0.02	4.99	2.96
(4)	100%	0.140	0.00	4.21	2.68
(5)	100%	0.100	0.02	4.03	2.61
(6)	100%	0.100	0.00	3.54	2.41
(7)	50%	0.171	0.02	2.49	1.95

Notes: This table reports social BCRs and MVPFs of financial aid equivalent to providing on-campus housing. Panel A illustrates the BCRs and MVPFs when the aid is targeted at different populations: the full sample of students, students who grew up in a traditional home, and students who grew up in a rural area (i.e. not in the major cities Lusaka, Chingola, Kitwe, or Ndola). Panel B illustrates the MVPFs and BCRs under different assumptions about the return to tertiary education, economic growth in Zambia, and the true effect size of the housing stipend on student outcomes relative to the estimated effect (100% assumes the full effect, 50% assumes half the effect).

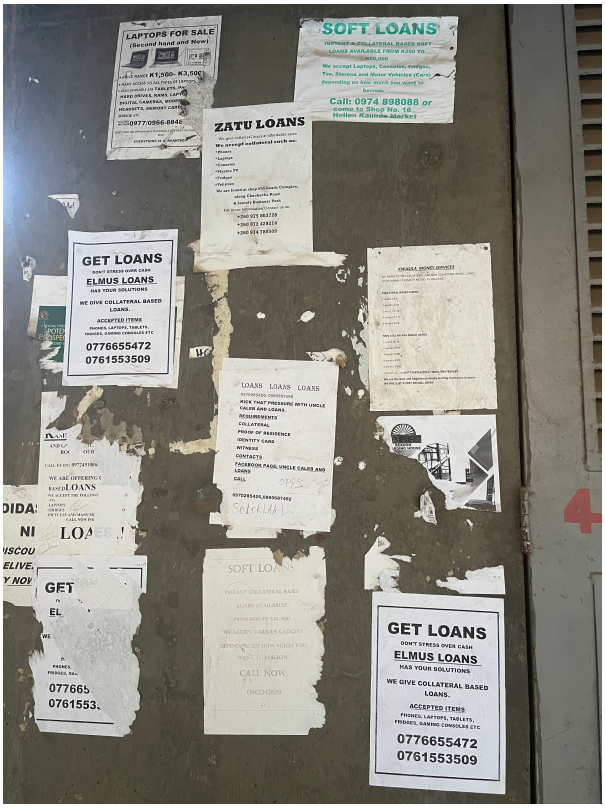
A Appendix Figures & Tables

Figure A1
Gross Enrollment Ratio in Tertiary Education in SSA, 2000-2024



Notes: This figure shows gross enrollment ratios in tertiary education from 2000-2024 for nine countries in sub-Saharan Africa. Countries were chosen based on completeness of data. Zambia is included despite relatively sparse data since it is the focus of this paper.
Source: UNESCO (UNESCO, 2025). The Zambia, 2022 data point was calculated using total university enrollment divided by half the population aged 15-24 (HEA, 2022; CIA, 2022).

Figure A2
Photos From UNZA Campus



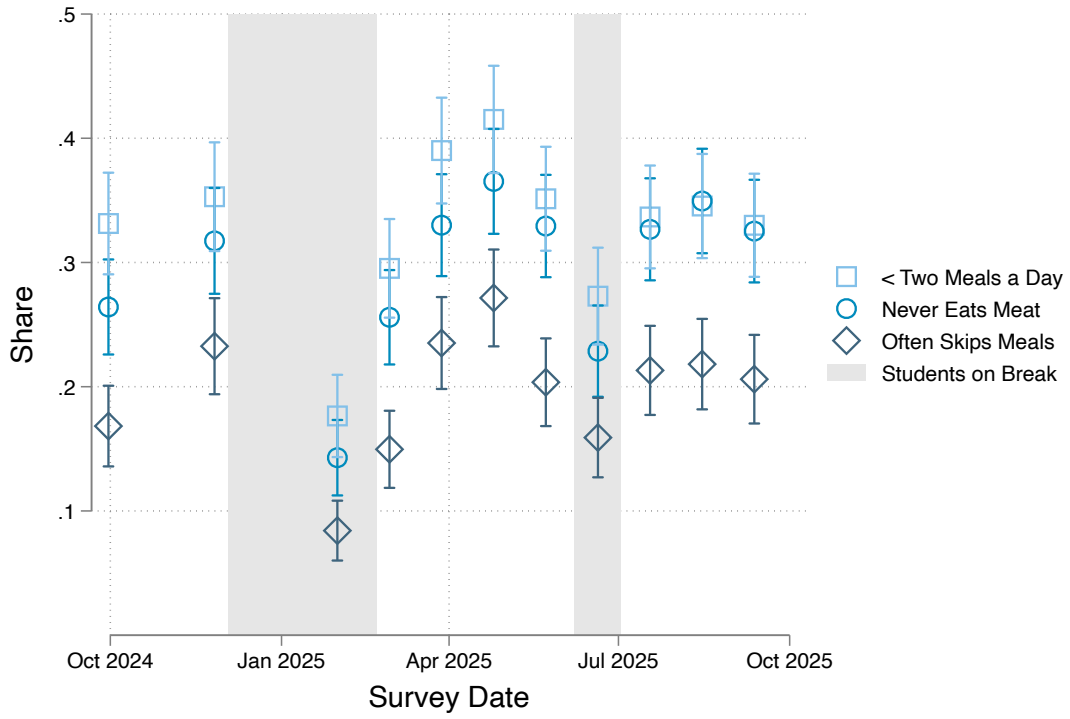
(a) Flyers for Loans on Campus



(b) Typical Dorm Room for 2-4 Students

Notes: This figure presents photos from the UNZA campus. The figure on the left shows a bulletin board on campus. Almost all the flyers on the bulletin board are advertising loans. The photo on the right shows one side of a typical on-campus dorm room.

Figure A3
Food Security on Campus and at Home



Notes: This figure reports the frequency of different measures of food insecurity by survey date. Questions were asked about a 2-week recall period every four weeks and appeared on 11 surveys (1, 2, 3, 5, 7, 9, 11, 13, 15, 17, and 19). The gray shaded area represents the period when students were at home between terms. Since the later surveys overlap the experimental intervention, we only report measures from the control group.

Table A1
Universities in the Largest 15 Countries in Sub-Saharan Africa

Country	**Highest Ranked University**			**Largest Public University**		
	University Name	Enrollment	Location	University Name	Enrollment	Location
Nigeria	University of Lagos	55,000	Lagos**	University of Lagos	55,000	Lagos**
Ethiopia	Mekelle University	32,000	Mekelle	Addis Ababa University	48,673	Addis Ababa**
DR Congo	University Of Kinshasa	35,000+	Kinshasa**	University of Kinshasa	35,000+	Kinshasa**
Tanzania	Muhimbili Health University	5,000+	Dar es Salaam**	University of Dar es Salaam	40,000+	Dar es Salaam**
South Africa	University of Cape Town	29,000	Cape Town*	University of Pretoria	55,000	Pretoria**
Kenya	University of Nairobi	84,000	Nairobi**	University of Nairobi	84,000	Nairobi**
Uganda	Makerere University	35,000+	Kampala**	Makerere University	35,000+	Kampala**
Sudan	University of Khartoum	30,000	Khartoum**	University of Khartoum	30,000	Khartoum**
Angola	Agostinho Neto University	30,000	Luanda**	Agostinho Neto University	30,000	Luanda**
Mozambique	Eduardo Mondlane University	40,000	Maputo**	Eduardo Mondlane University	40,000	Maputo**
Ghana	University of Ghana	73,000	Accra**	University of Ghana	73,000	Accra**
Ivory Coast	Université Houphouët-Boigny	60,000	Abidjan*	Université Houphouët-Boigny	60,000	Abidjan*
Madagascar	University of Antananarivo	30,000	Antananarivo**	University of Antananarivo	30,000	Antananarivo**
Cameroon	University of Yaounde I	55,000	Yaoundé**	University of of Yaounde I	55,000	Yaoundé**
Niger	Abdou Moumouni University	25,000	Niamey**	Abdou Moumouni University	25,000	Niamey**

*Major city **Capital city

Notes: This table reports the highest ranked university (from 2025/2026 US News and World Report) and the largest public university for each of the 15 largest countries in SSA, with estimated enrollments and university location. When there was no ranked university in a country (DR Congo, Angola, Mozambique, Ivory Coast, Madagascar), we substituted the oldest university in the country. A major city is defined as having more than 1 million residents.

Table A2
Summary Statistics

Panel A: Demographic Controls

	Mean (1)	Std. dev. (2)	Min (3)	Max (4)	N (5)
Age	20.481	1.644	18	25	1022
Married	0.008	0.088	0	1	1022
Number of Children	0.019	0.135	0	1	1022
Government Bursary	0.794	0.405	0	1	1022
Number of Siblings	3.634	1.575	0	6	1022
Had Puberty Initiation	0.131	0.338	0	1	1022
Number of People Shared Bedroom with	2.717	1.407	0	6	1020
Mother Years of Education*	10.320	4.280	0	23	857
Father Years of Education*	11.446	4.264	0	23	803
HH had Electricity*	0.766	0.424	0	1	970
HH had Internet*	0.398	0.490	0	1	970
HH Moderately Poor*	0.630	0.483	0	1	970
HH Very Poor*	0.126	0.332	0	1	970
Traditional Home*	0.249	0.433	0	1	970

Panel B: School of Study

	Mean (1)	Std. dev. (2)	Min (3)	Max (4)	N (5)
Agricultural Sciences	0.054	0.226	0	1	1022
Education	0.147	0.354	0	1	1022
Engineering	0.069	0.254	0	1	1022
Business	0.013	0.112	0	1	1022
Health Sciences	0.024	0.155	0	1	1022
Humanities and Social Sciences	0.438	0.496	0	1	1022
Law	0.062	0.241	0	1	1022
Medicine	0.012	0.108	0	1	1022
Mines	0.041	0.199	0	1	1022
Natural Sciences	0.090	0.286	0	1	1022
Nursing Sciences	0.023	0.152	0	1	1022
Public Health	0.012	0.108	0	1	1022

Panel C: Housing and Outcomes

	Mean (1)	Std. dev. (2)	Min (3)	Max (4)	N (5)
Financial Security Index	-0.271	0.989	-2.285	1.125	2023
Food Security Index	-0.174	0.959	-1.988	3.604	2023
Rent Paid	3,264	2,641	0	54,000	961
Rent In	275	1,284	0	15,000	1014
Net Rent Paid	3,006	2,946	-12,300	54,000	961
Passed all Courses	0.663	0.473	0	1	20962
Allocated Housing	0.180	0.384	0	1	1022
Squatting	0.308	0.462	0	1	1022

Notes: This table reports summary statistics for the the full University of Zambia sample. Panels A reports summary statistics for the demographic controls that are available to be selected by the lasso estimator. Variables marked with an asterisk (*) are drawn from survey 20 and therefore exhibit higher attrition. Unmarked variables are from the baseline survey, which was completed by all respondents. In addition, variables capturing parental years of education have lower response rates, as respondents did not always know this information. Sample sizes vary across variables accordingly.

Table A3
Predictors of Housing Allocation

	(1) Allocated Housing
Married	-0.041
	(0.144)
Number of Children	0.129
	(0.106)
Government Bursary	0.014
	(0.034)
Mother's Education	-0.001
	(0.006)
Father's Education	0.007
	(0.006)
Number of Siblings	-0.006
	(0.009)
Had Puberty Initiation	0.018
	(0.039)
Number of People Shared	-0.012
Bedroom with	(0.010)
HH had Electricity	0.034
	(0.038)
HH had Internet	0.006
	(0.030)
HH Moderately Poor	-0.043
	(0.033)
HH Very Poor	-0.077
	(0.053)
Traditional Home	0.041
	(0.036)
Agricultural Sciences	0.031
	(0.126)
Education	0.055
	(0.118)
Engineering	0.048
	(0.123)
Business	-0.011
	(0.163)
Health Sciences	0.041
	(0.142)
Humanities and Social Sciences	0.042
	(0.114)
Law	-0.034
	(0.125)
Medicine	-0.100
	(0.165)
Mines	-0.106
	(0.131)
Natural Sciences	-0.023
	(0.121)
Nursing Sciences	-0.006
	(0.145)
Public Health	-0.125
	(0.163)
Joint F-test	0.953
N	932
Mean DV	0.179

Notes: This table regresses an indicator variable for whether a woman is allocated housing, conditional on cohort and home district fixed effects, on a variety of demographic controls. The joint F-test tests whether one can reject the null that the controls jointly have no effect on housing allocation.

Table A4
Effect of Housing Allocation on Individual Index Components

	Skipped Meals		Eats $\geq$ 2 Meals		Eats Meat		Loan	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Allocated Housing	-0.146**	-0.103*	0.049	0.049	0.211**	0.153	-0.064	-0.019
	(0.057)	(0.056)	(0.045)	(0.045)	(0.098)	(0.098)	(0.049)	(0.049)
LASSO Controls		X		X		X		X
Mean DV	2.012	2.017	0.659	0.662	2.178	2.178	0.574	0.577
N	2007	1888	2006	1887	2008	1889	2005	1887

	Pawned or Sold Items		Avoided Healthcare		Compromising Acts		Behind on Housing	
	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
Allocated Housing	-0.109**	-0.075	-0.097**	-0.054	-0.106***	-0.106***	-0.178***	-0.121***
	(0.048)	(0.047)	(0.046)	(0.048)	(0.035)	(0.035)	(0.047)	(0.046)
LASSO Controls		X		X		X		X
Mean DV	0.409	0.410	0.390	0.392	0.208	0.206	0.652	0.654
N	2004	1886	2007	1888	2004	1886	2008	1889

Notes: This table reports the coefficients of regressions of each of the individual components of the food security index (1-6) and financial security index (7-16) on being allocated housing. To correct for measurement error, we instrument for reporting being allocated housing in survey 1 with reporting being allocated housing in survey 2. All specifications use double lasso to choose controls. "Skipped meals" ranges from 1 (never) to 3 (often). "Eats $\geq$ 2 Meals" is a binary indicator variable for whether a student has eaten at least two meals every day in the previous two weeks. "Eats Meat" ranges from 1 (never) to 5 (almost every day). The outcome variables in the financial security index are all binary indicators. The data are pulled from surveys 1 and 2. The pool of demographic controls is shown in Table A2 Panel A.

Table A5
Effect of Housing Allocation on Academic Outcomes

Panel A: Survey Data				
	Passed All Courses	Repeat Courses	Repeat Year	Other
	(1)	(2)	(3)	(4)
Allocated Housing	0.113**	-0.084*	-0.014	-0.016
	(0.051)	(0.044)	(0.017)	(0.027)
LASSO Controls	X	X	X	X
Mean DV	.700	.205	.024	.069
N	952	953	953	953

Panel B: Administrative Data				
	Passed All Courses	Repeat Courses	Repeat Year	Other
	(1)	(2)	(3)	(4)
Allocated Housing	0.121**	-0.100*	-0.027	-0.012
	(0.054)	(0.052)	(0.021)	(0.024)
LASSO Controls	X	X	X	X
Mean DV	.663	.28	.049	.045
N	937	937	937	937

Notes: This table reports the coefficients of regressions of course results on being allocated housing. The "Other" category includes students who deferred exams, are awaiting results, or who withdrew. To correct for measurement error, we instrument for reporting being allocated housing in survey 1 with reporting being allocated housing in survey 2. The dependent variables in Panel A come from the self-reported data in survey 3, and the dependent variables in Panel B come from administrative data matched at the student id level. The small difference in sample is a result of misspecified student IDs that could not be matched to administrative data. All columns control for fixed effects for district of origin and age, and additionally contain lasso-selected demographic controls (see Table A2 for the list of demographic controls).

Table A6
Effects of Housing Allocation, with all Demographic Controls

Panel A: Rent						
	Rent Paid		Rent In		Net Rent	
	(1)	(2)	(3)	(4)	(5)	(6)
Allocated Housing	-1610.486***	-1695.715***	856.023***	860.990***	-2519.257***	-2607.866***
	(327.683)	(354.876)	(237.178)	(235.246)	(442.906)	(462.093)
Controls		X		X		X
Mean DV	3280	3280	253	253	3032	3032
R-Squared	0.006	0.032	0.045	0.072	0.028	0.052
N	906	906	952	952	906	906

Panel B: Financial Vulnerability & Educational Outcomes						
	Food Security		Financial		Passed	
	(1)	(2)	(3)	(4)	(5)	(6)
Allocated Housing	0.226**	0.163*	0.333***	0.218**	0.129**	0.128**
	(0.094)	(0.095)	(0.103)	(0.099)	(0.056)	(0.058)
Controls		X		X		X
Mean DV	-0.181	-0.181	-0.277	-0.277	0.662	0.662
R-Squared	0.009	0.118	0.011	0.165	-0.004	0.034
N	1889	1889	1889	1889	937	937

Notes: This table shows the same specifications as Table 1 except that columns 2, 4 and 6 include all demographic controls instead of just controls selected by the lasso specification. To correct for measurement error, we instrument for reporting being allocated housing in survey 1 with reporting being allocated housing in survey 2. Observations that have any missing values for control variables have been dropped. The full set of demographic controls is shown in Table A2 Panel A.

Table A7
Heterogeneous Effects of Housing Allocation on Passing by SES

Dependent Variable: Passed all Courses				
Target:	Traditional Home		Rural	
	(1)	(2)	(3)	(4)
Housing (Target)	0.225**	0.211*	0.125*	0.164**
	(0.109)	(0.113)	(0.069)	(0.070)
Housing (Non-Target)	0.099	0.100	0.043	0.068
	(0.065)	(0.062)	(0.087)	(0.085)
LASSO Controls		X		X
P-Value (Target = Non-Target)	0.316	0.389	0.460	0.381
Mean DV	0.714	0.706	0.684	0.695
N	947	937	999	937

Notes: This table reports the coefficients of regressions of passing all courses on being allocated housing, by proxies of socioeconomic status. To correct for measurement error, we instrument for reporting being allocated housing in survey 1 with reporting being allocated housing in survey 2. In columns 1 and 2, coefficients are estimated separately (in one regression) for students who report growing up in a traditional (mud) home, and those who did not. In columns 3 and 4, we report coefficients separately for those whose natal home is in one of the four largest urban districts (Lusaka, Kitwe, Ndola and Chingola) versus those from all other districts. All columns control for fixed effects for district of origin and age. Columns 2 and 4 additionally contain lasso-selected demographic controls (see Table A2 for the list of demographic controls).

Table A8
Living on Campus but not Allocated Housing

Panel A: Rent						
	Rent Paid		Rent In		Net Rent	
	(1)	(2)	(3)	(4)	(5)	(6)
Squatting	496.332**	617.611***	-148.468	-162.310*	646.319**	810.072***
	(243.227)	(238.007)	(103.740)	(96.471)	(266.401)	(260.137)
LASSO Controls		X		X		X
Mean DV	3263	3286	274	258	3009	3032
N	956	906	1006	952	956	906

Panel B: Financial Vulnerability & Educational Outcomes						
	Food Security		Financial		Passed	
	(1)	(2)	(3)	(4)	(5)	(6)
Squatting	0.149	0.115	0.075	0.061	0.014	-0.009
	(0.091)	(0.088)	(0.096)	(0.088)	(0.054)	(0.053)
LASSO Controls		X		X		X
Mean DV	-0.180	-0.180	-0.275	-0.277	0.660	0.666
N	2008	1889	2008	1889	999	937

Notes: This table reports the same specifications as Table 1 except that the independent variable is now students who are "squatters" on campus: students who rent space in a dorm room allocated to another student. To correct for measurement error, we instrument for reporting squatting in survey 1 with reporting squatting in survey 2. The full set of demographic controls available to be selected by the lasso estimator is shown in Panel A of Table A2.

Table A9
Share of Each Graduation Outcome Given Year-End Outcomes

	Passed All Courses	Had a Proceed & Repeat	Had a Repeat Year	Total
Dropout	0.012	0.019	0.471	0.065
4 Years to Graduate	0.880	0.755	0	0.739
5 Years to Graduate	0.084	0.151	0.235	0.124
6 Years to Graduate	0.024	0.057	0.059	0.039
7 Years to Graduate	0	0.019	0.235	0.033

Notes: This table uses the Bau et al. (2025) dataset to calculate the share of students who graduated in 4, 5, 6, or 7 years or dropped out of school, given their outcomes at the end of each year. The possible year-end outcomes are: never being required to repeat courses or the year ("Passed All Courses"), ever being required to repeat courses ("Had a Proceed & Repeat"), or ever being required to repeat the year ("Had a Repeat Year"). The "Total" column reports the share of all students with each graduation outcome.

B Data Appendix

B.1 Details on Survey Methodology and Sampling

Students were recruited on campus in September and October of 2024, coinciding with the beginning of the second semester of the 2024 academic year. Recruiters were all women in their 20s, and primarily former UNZA students themselves. Once students agreed to be a part of the study, they were texted a link to the baseline survey to self-administer on their smartphones. Since internet access is required for schoolwork, nearly all UNZA students have smartphones. Recruiters were available to help with any technical issues or to answer any questions about the survey.

Subsequent surveys were texted directly to participants, who completed them on their smartphones. Students who did not complete surveys were texted and called by facilitators to remind them and solve any technical issues. Participants received a small amount of airtime as compensation for each survey, and a monthly data bundle to ensure that they were able to complete surveys.

B.2 Survey Questions

Food Security

- In the last two weeks, did you eat at least two meals each day? [yes=1, no=0]
- In the last two weeks, how often have you skipped meals because you could not afford to buy food? [never=1, sometimes=2, often=3]
- In the last two weeks, how often did you eat meat or fish? [never=1, once or twice=2, sometimes=3, many times=4, almost every day=5]

Financial Questions

- In the last four weeks, have you fallen behind on meeting housing expenses (e.g. rent, utilities, repairs) due to a lack of funds? [yes=1, no=0]
- In the last four weeks, have you avoided seeking healthcare due to a lack of funds? [yes=1, no=0]
- In the last four weeks, have there been times when you have done something you were not proud of to raise funds? [yes=1, no=0]
- In the last four weeks, have you needed to pawn or sell any of your belongings to make ends meet? [yes=1, no=0]
- In the last four weeks, have you needed to get a loan (including borrowing from family or friends) to afford your expenses? [yes=1, no=0]

B.3 Interest Rate Calculations

In the biweekly survey loan module, participants were asked every other survey (every four weeks) whether they had taken out a loan or borrowed any money ("In the last four weeks, have you needed to get a loan (including borrowing from family or friends) to afford your expenses?"). If they answered yes, they were asked for the source of the loan (the options were: "bank", "parent", "non-parent family member", "friend", "moneylender", and "loan app"), when the loan was due, and what total amount would be due at that time. If no due date was specified, but the total amount due was the same as the total amount of the loan, then we assigned a zero interest rate (this was most common in loans from friends and family). If no due date was specified, but the total amount due was greater than the amount of the loan, we coded the interest rate as missing, since there was no way to calculate a monthly interest rate without information on the due date. We assume all loans were taken out at the start of every month. To mitigate the influence of outliers, we exclude observations with interest rates in the top and bottom one percentiles of the distribution and any negative interest rates.

B.4 Attrition and Non-Response

The data for this paper were collected as a part of a larger research project by the authors at the University of Zambia. Recruitment was done in September and October of 2024, and follow-up surveys were sent in November 2025, and then surveys were sent biweekly between late January and October 2025.

Surveys 1 and 2 were intended as a baseline for a large randomized controlled trial. Treatment was assigned at the end of Feburary 2025, and thus the majority of the analysis in this paper comes from surveys 1, 2, 3, and 5. Survey 4 included questions not used in this analysis. Figure 3 and Figure A3 include data from surveys 1, 2, 3, 5, 7, 9, 11, 13, 15, 17, and 19. Because surveys 7-19 happen after the implementation of our randomized intervention, we only use control participants for these figures.

Survey 20 in October 2025 included an additional set of demographic questions that were intended to more closely match those asked in nationally representative surveys in order to facilitate the comparisons found in Figure 1.

Table B1
Survey Rounds and Attrition

Survey	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Month	Oct 24	Nov 24	Jan 25	Feb 25	Feb 25	Mar 25	Mar 25	Apr 25	Apr 25	May 25
Demographics	X									
Housing	X	X								
Pass			X							
Rent In/Out										
Food Security	X	X	X		X		X		X	
Financial	X	X	X		X		X		X	
Mental Health		X	X		X		X		X	
Obs	1,022	1,002	1,022	1,015	1,019	1,017	1,011	1,012	1,013	1,014
Response Rate	1	.980	1	.993	.997	.995	.989	.990	.991	.992

Survey	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
Month	May 26	June 25	June 25	July 25	July 25	Aug 2025	Aug 25	Sep 25	Sep 25	Oct 25
Demographics										X
Housing										
Pass										
Rent In/Out		X								
Food Security	X		X		X		X		X	
Financial	X		X		X		X		X	
Mental Health	X		X		X		X		X	
Obs	1,012	1,014	1,013	1, 009	1,013	1,011	1,006	1,009	1,005	970
Response Rate	.990	.992	.991	.987	.991	.989	.984	.987	.983	.949

This table reports the questions asked in each survey round that are relevant for the analysis in this paper. If no question from a survey round was used in the analysis, no categories are checked. The table also reports the number of individuals who responded to each survey and the share of the sample.

B.5 Survey Rounds Used for Analyses

Our goal in this paper was to describe both the demographics and the living conditions of a sample of students at the University of Zambia. Because the data collection was part of a larger study that included a randomized treatment, we attempted to only use data that would not have been contaminated by the treatment. For the majority of the analysis, we use only pre-treatment data. Treatment assignment was announced in late February 2025, and thus we conducted four surveys fully before treatment was assigned. In three of these surveys (Survey 1 in October 2024, Survey 2 in November 2024, and Survey 4 in Early February 2025), the majority of students were on campus. In addition, we did not ask every question in every survey round, so we used the survey rounds in which questions were asked. Lastly, for Figure 3 and Appendix Figure A3, we are interested in the evolution of food security over time, so we use data from post-treatment rounds, through August 2025. In these figures, we only use data from control subjects.

Thus, data on food security, financial vulnerability, mental health, and interest rates in Figure 2 come from survey rounds 1 and 2, in October and November 2024. Data on food security for Figure 3 and Appendix Figure A3 come from survey rounds 1, 2, 3, 5, 7, 9, 11, 13, 15, 17, and 19 (October 2024-August 2025), and are only from control participants. In Table 1 and Appendix Tables A4, A6, and A8 data on food security and financial vulnerability come from surveys 1 and 2 (October and November 2024), data on rental income and prices comes from survey 12 (May 2025), data on passing 2024 courses comes from Survey 3 (January 2025), and data on housing allocation comes from surveys 1 and 2.

Lastly, the specific demographic data used in Figure 1 comes from survey round 20 (October 2025). These specific questions were added to a later round of the survey in order to specifically match questions asked in comparison data sets. Given that these questions are about the natal household, we do not expect them to be affected by contemporaneous treatment.

C Focus Group and Interview Quotes

Food Security

Interviewer: Do you always eat breakfast?
Respondent: I mostly go like lunch and supper. I don't have that much to provide for myself for breakfast.

Respondent: Yeah, obviously the normal thing that you eat is in nshima [staple grain]... if you want some meat, maybe if you have a 15 you buy, but you're not guaranteed to be, like, having the money.

Interviewer: If you're in a position where maybe you don't have your meal allowance, or you're running out that month, what would you do?
Respondent: Ah, ask my friends... my mom is unable to provide for me for food, so they say 'no it's ok we can share'. Some others bring me cooking oil, some others bring me relish, so that's how I went on.

Interviewer: So what do you eat usually?
Respondent: I like rice, [soy] chunks, chicken. I make eggs mostly, and bread.
Interviewer: Not nshima?
Respondent: Nshima is expensive to buy! Unless when I visit my aunt I get some.

Finances

Respondent: In my first year, remember, I don't know anything. I don't know the cost. Ok, I'm not from Lusaka. I come from a far place. Eight to nine hours drive. So you'll find you have just reached, you check the shop, but it's too expensive. So that's the tricky part.

Interviewer: And since you are on government sponsorship for school fees, they pay that. How about your other expenses? Like, how do you pay for the other expenses that you have, for example, groceries, food...
Respondent: Honestly, it's hard for me, yeah, because my dad doesn't have a stable job, yeah? So apparently he's doing nothing. So when I want some things, even if I want them, sometimes I'll just think 'yeah, it's fine', because once I tell them, it will be like for me, I think, a lot.

Interviewer: Is the food allowance enough, you think, or do you still have to spend a little more?
Respondent: It's not enough, especially for those of us who are outside campus. The 750 you have to pay rent, and boarding houses are very expensive. You won't find a boarding house less than 750, and that's the 750 you get. So you need more money to balance between accommodation and food.

Housing

Respondent: For the first two months of this year he [my boyfriend] paid for my rentals [housing]. And this month, I had to find people I wanted to share a house with, so I sold my laptop and contributed.

Interviewer: How many are in the room where you are squatting?
Respondent 1: Three.
Interviewer: Three total or three on one side?
Respondent 1: For me it's a store room, so it's just a small room.
Interviewer [to respondent 2]: What about you?
Respondent 2: ... four on one side. [half of an 8x10 room]

Respondent: I have a friend who was accommodated.
Interviewer: On campus?
Respondent: Yes, on campus. So she charged me, I have to be paying a few thousand.
Interviewer: That's for the semester?
Respondent: Yes. But up to now I haven't paid.

Interviewer: The arrangement was that you pay the accommodation at once, or slowly, given how much...
Respondent: She told me to pay... so she told me when I was moving in she told me ok you can pay one thousand per month, but you pay every month. But still, it was difficult. So when we got our BC [busary loan] money, I just brought the whole money... I know my parents can't really manage to do that right now, so I just put my whole BC money in.

D Cost-Benefit and MVPF Calculation Details

We consider the case where a cash stipend is given to first-year students equal to the cost of housing allocation (in addition to the existing bursary loan). We calculate the expected costs and benefits of such a transfer given its impact on a student's year end outcomes and, in turn, the impact of those year end outcomes on a students chance of graduating on time. Specifically, from Table A5, we can see the effect of receiving a stipend on a student's likelihood of being required to repeat the year ("Repeat Year"), repeat some courses ("Proceed and Repeat"), or neither of those outcomes (i.e. passing their classes or receiving an outcome not in any of these categories). By looking at a separate set of UNZA administrative data from Bau et al. (2025), we can then calculate the likelihood of a student graduating in 4, 5, 6, or 7 years or dropping out, given a student has ever had to repeat a year or repeat courses (these probabilities are reported in Table A9). We use these probabilities to estimate the expected costs and benefits of the students who are given a housing-equivalent stipend compared to those who were not.

We consider the policy of providing cash, rather than building housing, because it is precisely that housing is scarce that makes it so valuable: students are able to rent out space in their dorm rooms to other students. If the university were to build more housing, it would likely alleviate some of the housing cost burden, but also would likely reduce the rent paid by "squatters," and thus dilute the value of being allocated housing. In addition, we see no additional benefit of living on campus (relative to the boarding houses or flats in surrounding neighborhoods) in Appendix Table A8, which gives us confidence that it is the monetary value of the housing, not some other aspect of living on campus, that increases the likelihood of passing.

We consider two measures of the cost-effectiveness of this policy. The first is the social benefit-cost ratio:

$$BCR = \frac{\text{Total Social Benefits}}{\text{Total Social Costs}}$$

while the second is the marginal value of public funds (MVPF) measure of Hendren and Sprung-Keyser (2020):

$$\text{MVPF} = \frac{\text{WTP}}{\text{Net Government Costs}} = \frac{\text{WTP}}{\text{Program Cost} - \text{Increase in Tax Revenue} + \Delta \text{ Tertiary Spending}}.$$

Costs to Government. From Table 1, students allocated housing report paying K 2519 less in "net rent" per *term*. There are two terms in an academic year, so we assume that the housing allocation nets them K 5038 in a year. On average, the students who were allocated housing in our sample received it 1.6 years before they obtained the year-end results we report. Thus, we consider the costs and benefits of a cash grant of K 5038 (US$193) per year for 1.6 years, starting when a student is 18 years old. We assume that the repayment rate is 40%, and is made in equal payments over 10 years starting when the student is no longer in school. This is the average repayment reported to us by loan board officials, and the standard repayment schedule. We use a standard 5% annual discount rate for all calculations.

As stated above, we assume there are five scenarios: a student graduates in 4, 5, 6 or 7 years or they drop out of school. From administrative data, we estimate that students normally drop out of school after 5.4 years on average. We assume the cost of providing one year of tertiary education is K46720 (as estimated by Saeki et al. (2016), adjusted from 2013 to 2024 ZMK). Therefore, a student who leaves school after G year costs the university the following (including the transfer):

$$\sum_{age=18}^{17+G} \frac{K46720}{1.05^{age-18}} + 8134$$

We calculate the expected value for the cost over the 5 different scenarios using a student's outcome at the end of the year (i.e. having to repeat the year, repeat courses, or neither) to predict the probability of each scenario. We use the probability of each year end outcome (given by Table A5) to calculate the overall expected cost of educating the students who have been given the stipend compared to those who have not. The difference in social cost is K 5805.

Social Benefits. For this exercise, we will assume that students who graduate receive the returns of 4 years of university education and students who dropout receive 2.7.[16] From Gethin (2025), the return to one year of tertiary education in SSA is 17.1%. From the 2021 LFS survey, the average wage of a secondary school graduate is K 56800 (adjusted to 2024 ZMK). We assume 2% wage growth per year, which is roughly in line with historical economic growth rates in Zambia (World Bank, 2026). We also assume students start working right after they leave school and retire at 60. We abstract away from the non-pecuniary benefits of tertiary education, such as health impacts, marriage market impacts, and inter-generational benefits, even though there is evidence that these are important as well (Duflo et al., 2024b).

Thus, the NPV of a student's income who spends G years in school and receives Y years of education is as follows:

$$1.171^{Y} \times \sum_{age=18+G}^{59} K56800 \left(\frac{1.02}{1.05}\right)^{age-18}$$

We use a very similar exercise as we did above to calculate the expected NPV of wages, using the probabilities of each graduation outcome inferred from the year end outcomes, the likelihoods of which are impacted by the presence of the stipend.

Since the cash transfer is received by recipients, and valued dollar-for-dollar, we also include this amount as a social benefit to recipients. FOr our baseline assumptions, we find an expected social benefit of K 19018.

When calculating recipients' willingness to pay for the MVPF calculation, we assume the recipients will pay back the loan with 40% probability (we assume at zero interest, given the normal interest rates of bursary loans are far outweighed by annual inflation). We also assume recipients will pay consumption taxes on the loan and their wages. Zambia has a VAT applied to all consumption of 16% and an estimated compliance rate of 70% (PwC, 2025a; Alexeev and Chibuye, 2016). From this, we calculate an expected willingness to pay of K 15863.

Benefits to the Government. The share of the returns to education captured by the government vs. the student will not affect the social benefit-cost ratio. However, this is relevant for the marginal value of public funds, since in the MVPF calculation, the denominator is net government spending. To calculate this, we calculate the increased tax revenue captured by the government due to the policy. We only use VAT for our calculations, although there is also an income tax for incomes above ZMK 61200 (US$2345), which will likely be paid by at least some of the recipients in our sample (PwC, 2025b). Thus, this tax calculation is likely an underestimate. In addition, we abstract away from the well-documented positive externalities of expanding higher education, such as better talent allocation, spillovers onto low-skilled workers, intergenerational benefits, etc. With our baseline assumptions, we estimate an expected increase in government spending of K 2650.

[16] According to administrative data of Bau et al. (2025), dropouts leave school after 3.7 years on average. We assume they do not finish their last year, and thus receive 2.7 years of tertiary education.