The Impact of Free Secondary Education: Experimental Evidence from Ghana[1]

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Abstract

In 2008, 682 secondary school scholarships were awarded by lottery among 2,064 Ghanaian students (aged 17 on average) who were admitted to a specific school and track but could not immediately enroll, in most cases due to lack of funds. We use follow-up data collected until 2016 to document downstream impacts by age 25. For the whole sample, scholarship winners were 26 percentage points (55%) more likely to complete secondary school, obtained 1.26 more years of secondary education, scored an average of 0.15 standard deviations greater on a reading and math test, and adopted more preventative health behavior. Women who received a scholarship had 0.217 fewer children by age 25. Scholarship winners were also 3 percentage points (30%) more likely to have ever enrolled in tertiary education. Despite the fact that they were 2.5 percentage points more likely to be enrolled in school at the time of the last survey, they were 5.5 percentage points (10%) more likely to have positive earnings and had significantly higher (hyperbolic sine) earnings. For students admitted to vocational tracks (comprising 60% of the sample) scholarships did not increase tertiary education, which simplifies the interpretation of labor market outcomes. In this subsample, scholarships increased the likelihood of earning money by 8.8 percentage points (16%) and increased total earnings by 19%. The estimated financial rate of return to education in this subsample is 13%. For students admitted to academic majors, scholarships increased the chance of having enrolled in tertiary education by 5.3 percentage points on a base of 11 percent. This effect is driven overwhelmingly by women, who nearly double their rate of tertiary enrollment and fully catch up with men. We cannot reject the hypothesis that among those admitted to academic tracks, scholarships did not affect average labor market participation and earnings by age 25, but since more scholarship winners than non-winners were still in school as of 2016, it is too early to definitively assess labor market impacts in this population.

[1] This randomized trial is registered in the The American Economic Association's registry for randomized controlled trials under RCT ID AEARCTR-0000015. The study protocol was approved by the IRBs of UCLA, Stanford, MIT and IPA. We thank the Ghana Education Service and IPA Ghana for their collaboration, and Jonathan Addie for outstanding project management. We are grateful to Ishita Ahmed, Madeline Duhon, Jinu Kola, Ryan Knight, Mark Walsh, Victor Pouliquen and Nicolas Studer for outstanding research assistance. The funding for this study was provided by the NIH (Grant #R01 HD039922), the IGC, 3ie, the Partnership for Child Development and the Nike Foundation. We thank them, without implicating them, for making this study possible. Dupas also gratefully acknowledges the support of the NSF (award number 1254167).

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1 Introduction

As more and more children in developing countries enroll in primary school and gender gaps in primary enrollment shrink, policymakers' attention has shifted to secondary school. For instance, the first target under education for the U.N's new "Sustainable Development Goals" is "by 2030, ensure that all girls and boys complete free, equitable and quality primary *and secondary education* leading to relevant and effective learning outcomes." In Ghana, the setting of this study, the incoming government has promised to make secondary education free.[2]

Many see secondary education as having potentially transformative economic and social impacts, particularly for girls. Yet others have more negative views; some experts believe that rapidly expanding access to secondary education will produce little additional learning, given weaknesses in the school system (e.g., Pritchett, 2001). Another hypothesis is that young people see secondary education as promising access to tertiary education and ultimately a government job, with associated rents, and that since such jobs are inherently limited, rapidly expanding education may lead to a cohort of "over-educated" young people, frustrated in their aspirations, and to associated social and political tensions (e.g. Krueger and Maleckova 2003; Heckman, 1991). A third hypothesis is that expanding access to secondary school in developing countries will require curricular changes to prepare students for the labor market. When the United States moved from a system of secondary schools designed to prepare elites for tertiary education to a system of mass secondary education, many secondary curricula dropped Greek and Latin and incorporated vocational education (Goldin, 1999).

This debate is surprisingly uninformed by high quality evidence from the developing world. Many studies in the developed world have used natural experiments to estimate the rates of return to education (e.g., Angrist and Krueger, 1990). However, it is not clear if the results generalize to developing countries which have vastly greater levels of education than did developed countries when they had comparable income levels (Pritchett, 2001). While many studies document the positive correlation between education and other outcomes, there are surprisingly few well-identified studies from lower income countries on the causal impacts of education.[3] We are aware of no randomized

[2] See for example the BBC article dated 9 December 2016, "Ghana election: Opposition leader Akufo-Addo declared winner". The second sentence reads: "Mr Akufo-Addo has promised free high-school education and more factories […]." See http://www.bbc.com/news/world-africa-38270956, accessed Jan 13, 2017.

[3] Most natural experiments in the developing world have focused on the effect of expanding access to primary (grades 1-5) or junior secondary (grades 6-8) education on earnings (Duflo, 2001, 2003), fertility (Osili, 2008; Duflo, Dupas, Kremer, 2015), child health (Chou et al, 2010), religiosity and empowerment (Gulesci and Meyersson, 2015). Ozier

controlled trial (RCT) and only one study based on regression discontinuities in admission test scores on the labor market impact of secondary education (Ozier, 2016). Although there are strong claims about the effects of secondary education for girls, especially on reproductive health, fertility, and empowerment (UNGEI, 2010; Warner, Malhotra and McGonagle, 2012; Ackerman, 2015), well-identified studies are scarce. A number of studies examine the impact of purely vocational education, but fewer compare more or less vocational tracks within regular secondary schools.[4]

Senior high school in Ghana, like British A-levels, has historically been selective. Admission is based on a gateway exam administered at the end of grade 8, which only roughly 40% of junior high school entrants pass.[5] Students apply not only to a particular school, but also to a particular major (track). Two majors (General Arts and General Science) are academically focused, while the other majors incorporate vocational education alongside traditional academic subjects.

Secondary school enrollment is also limited by tuition fees, which amounted to about 20% of GDP per capita in Ghana annually during our scholarship period.[6] Ghana has had a system of limited partial scholarships for certain select populations and, as mentioned, a recurring election promise over the past two presidential elections was to make secondary education free.

This paper provides experimental evidence on the impacts of free secondary school on the lives of young adults, and disaggregates these effects by gender and between academic and vocational tracks. In 2008, full scholarships were awarded to 682 adolescents, randomly selected among a sample of 2,064 rural youth who had gained admission to a particular track in a public high school but did not immediately enroll, 95% of whom cited lack of funds as the reason. Follow-up data were regularly collected until 2016, when these youth were on average 25.

(2016) uses a regression discontinuity approach to find that Kenyan students who barely got admitted to secondary school acquire more years of schooling, have higher cognitive scores, and a lower probability of low skill self-employment later in life if male, and fewer teen pregnancies if female. Friedman et al., (2016) exploit a randomized scholarship competition in Kenya to estimate effects of education on attitudes and values by age 17. Neither paper reports earnings information

[4] Attanasio, Kugler, and Meghir, 2011; Blundell et. al, 2000; Chevalier and Walker, 2001; O'Leary and Sloane, 2005; Bettinger, Kremer and Saavedra, 2010; Kugler, Saavedra, and Prada, 2015;Walker and Zhu, 2011; Bettinger et. al, 2016; Britton, Shephard and Vignoles, 2016)

[5] Around 70% of JHS entrants go on to take the BECE (see http://www.moe.gov.gh/assets/media/docs/FinalEducationSectorReport-2013.pdf) and 60% of BECE takers pass (see for example http://www.ghanaweb.com/GhanaHomePage/economy/artikel.php?ID=149100 or http://citifmonline.com/2014/06/16/only-60-of-bece-candidates-make-it-to-shs-ges/).

[6] A complete senior high school education, currently three years, would cost about 70% of GDP per capita, when additional clothing, exam and material fees are included.

Given our design, we examine impacts on those who would be affected were secondary education to become free, if other admission criteria did not change -- the relevant population for a discussion of making education free without changing selection criteria. As noted by Lang (1993) and Card (1999), treatment effects from relieving financial constraints to education may well differ from returns to education for those with test scores near the cutoff for satisfying academic criteria for admission, which are measured in regression discontinuity studies, such as Ozier (2016).

Consistent with the large literature suggesting that direct costs of education are an important determinant of schooling,[7] the scholarship increased educational attainment, although many students who did not win the lottery eventually enrolled. On average, winners were 30 percentage points (50%) more likely to enroll in secondary school and spent 1.26 more years in secondary education than non-winners.

Inconsistent with the most pessimistic expectations, this increase in educational attainment translated into an increase in cognitive skills. Five years into the study, scholarship winners scored on average 0.15 standard deviations higher on a math and reading comprehension test and were more knowledgeable about national politics and modern technologies.

The scholarship also significantly affected life outcomes. As of 2016, when most participants were around age 25, women who received a scholarship were 10.7 percentage points (or 18%) less likely to have ever been pregnant, significantly less likely to have ever lived or cohabited with a partner, and had .217 fewer children. Both men and women engaged in more preventative health behaviors and men reported engaging in less risky sexual behavior.

Across the full sample, access to free secondary education increased the chance of having ever enrolled in tertiary education by 3 percentage points on a base of 9 percent, and increased the probability that they were still enrolled in any form of schooling (mostly, tertiary) at the time of the survey by 2.5

[7] The adoption of Free Primary Education (FPE) was associated with a large increase in enrollment in sub-Saharan Africa (Lucas and Mbiti 2012; Keats 2014). Even under FPE, purchasing uniforms remained a substantial schooling expense and two studies in Kenya find that the provision of free uniforms increase schooling (Duflo, Dupas, Kremer 2015; Evans, Kremer and Ngathia 2009). In the 1990s, the Bangladeshi Female Secondary School Assistance project, which paid for tuition and provided a small cash stipend to families with a girl enrolled in grades 6 through 10, led to a large increase in secondary school enrollment for girls in the areas where it was implemented: the number of girls enrolled in school doubled in 10 years in those areas (Khandker, Pitt and Fuwa, 2003).

percentage points. Turning to labor market effects, they were 5.5 percentage points (10%) more likely to have positive earnings and had significantly higher (hyperbolic sine) earnings.

The tertiary education results complicate the interpretation of these labor market findings, since more of the treatment group youth are still in school. Treatment effects on tertiary education and on labor market outcomes differ substantially, however, by the track in which students were admitted before entering the scholarship lottery, which allows us to gain some traction on labor market impacts. For students who had been admitted to vocational tracks, whether female or male, scholarships had insignificant effects on tertiary enrollment. In this subsample, the scholarships increased labor hours by 17% (15 hours per month on a base of 87 hours) and total earnings by 19%. These gains are accounted for by the extensive margin of increased employment, not by higher hourly earnings or higher hours for those who are observed as working. Winning a scholarship increased the probability of having positive earnings by 8.8 percentage points and the probability of having worked at least 10 hours per month by 11.6 percentage points.

Among students admitted to academic tracks, there is a 5.3 percentage point increase in the chance of ever enrolling in tertiary education on a base of 11.0 percent, with much of this accounted for by a near doubling of enrollment in universities, the most prestigious type of tertiary education. The tertiary effects are driven primarily by women. For women, winning a scholarship almost doubled the chance of ever enrolling in tertiary education (9.5% to 18.8%).

Since among those admitted to academic tracks, scholarship winners were 5.3 percentage points more likely to be enrolled in an education or training program at the time of the survey, it is too early to definitively assess long-term labor market outcomes, but we can report some information. Estimated labor market effects in the full sample of academic admits, are small and statistically insignificant, and they are statistically different from the effects for vocational admits. This may reflect compositional issues if academic admits who were induced to stay in school by the program would have had better than average labor market outcomes. For women, bounds on labor market impacts on those who were not induced to stay in school by the program include everything from insignificant to strongly positive labor market effects. Among males admitted to academic majors, bounds on labor market effects on those not induced to be in school range from substantially negative to close to zero, making it impossible to reject either the hypothesis of no effect or that of an effect close to that on women.

The upper bounds of the effects for academic admits are also not statistically different from the upper bounds of the effects for vocational admits.

Setting aside any valuation of the utility effects of schooling, of changes in fertility, and of changes in work hours, a purely financial calculation based on our estimates suggests an internal rate of return to investments in vocational education of 13 percent. It is too early to compute the return to academic secondary education. This rate of return calculation is of course based on the partial, rather than general equilibrium impact of education. However, our study also took place in a challenging macroeconomic context in Ghana, and in an environment where, as we describe below, the market was flooded with new graduates: due to a change in the length of secondary school, two cohorts graduated at the same time.

The impact of free secondary school access for those who qualify is of independent interest, but this setting also allows us to shed light on the causal impact of extra years of education, to the extent that we believe the scholarship's impacts on final outcomes through channels other than education is minimal. While scholarships created positive income effects for infra-marginal families who would have eventually paid for their children's education, these effects are largely offset by reductions in earnings during the additional time children were in school, so it seems plausible that the learning, tertiary education, labor market, and fertility outcomes we observe are primarily due to increased secondary education rather than income effects. It is thus of interest to compare the IV estimates implied by our experimental results to the ordinary least squares (OLS) estimates of the impact of education from within the comparison group. We find that the OLS estimates exceed IV estimates of education's effect on learning gains, reductions in fertility and reductions in risky sexual behavior but are lower than IV estimates of impacts on labor market outcomes and preventative health behavior. Even with controls for junior high school finishing exam scores, OLS estimates of learning gains from additional years of education exceed IV estimates and remain below IV estimates of impacts on labor market returns and preventative health behavior.

The paper proceeds as follows. Section 2 describes the context and study design. Section 3 describes the data. Section 4 presents the impacts on educational attainment. Section 5 presents the reduced form impacts on fertility, marriage, health behavior, technology adoption, and civic awareness. Section 6 discusses labor market outcomes. Finally, section 7 concludes.

2 Context and Study Design

This section provides background: section 2.1 and 2.2 describe Ghana's education system and the macroeconomic and labor market context. Section 2.3 and 2.4 explain the sampling frame and randomization process. Section 2.5 describes the scholarship program; and section 2.6 explains how the sample was maintained over time.

2.1 Background on Ghana's Education System

Formal education in Ghana begins with two years of kindergarten, six years of primary school, and three years of junior high school (JHS). Primary and junior high school are free and enrolment rates are close to 95% in primary school and around 75% in junior high. At the end of JHS, students take the Basic Education Certification Examination (BECE) and those with high enough grades qualify for senior high school (SHS). Passing rates are low. As mentioned above, around 70% of JHS entrants go on to take the BECE and 60% of BECE takers pass. About 20% of those admitted do not enroll in SHS the following year (Ajayi 2014) and many cite costs as the reason. In 2011, government-approved tuition fees for day (non-boarding) students in senior high school were around 500 Ghana cedis per year, a very large sum in a country where the per capita GDP that year was 2400 Ghana cedis.[8] Many students do not have a day school within easy access, and must attend a more expensive boarding school, since there are only around 700 SHS for the entire country compared to over 9,000 JHS. As of 2010, girls were 6 percentage points (20%) less likely to ever reach SHS. Some of those who do not enroll in SHS enroll in Technical and Vocational Institutes (TVIs).[9] SHS enrollment in Ghana increased by more than 2.5 fold in the decade prior to 2015-6.

Students who complete SHS and do well on the SHS finishing exam (the West African Senior School Certificate Examination or WASSCE) may be admitted to tertiary programs, including degree programs at universities, less prestigious diploma programs, and government training programs, for example for teachers and nurses. There is a one-year gap between completion of SHS and admission into university or training colleges. Students who do not score well enough on the exam to secure

[8] See http://www.statsghana.gov.gh/docfiles/GDP/GDP_2014.pdf

[9] TVI students do not have to take any core academic classes and cannot go on to universities, teacher training programs or nurse training programs. However TVIs are a relatively minor part of Ghana's education system, with less than 10% the enrollment of SHS. In 2008, there were 43,592 full-time TVI students compared to the 486,085 SHS students (MoE Ghana, 2008).

tertiary admission can retake the SHS finishing exam an unlimited amount of times. Tertiary education is expensive, but many tertiary students received stipends prior to a 2014 policy change.

All SHS students must take a core of English language, mathematics, integrated science and social studies, but they choose electives from one of the seven majors or tracks of study. Majors can be broadly grouped into the two academically oriented majors, General Arts and General Science, and the five vocationally oriented majors: Home Economics, Visual Arts, Agriculture, Technology, and Business. General Arts is by far the most popular track, and it includes elective subjects such as French and social science. General Science includes advanced mathematics, chemistry, biology and physics, but in our population of interest a very small share of students (less than 5%) gains admission in that track.

When students apply to SHS, they apply not only to a particular school, but also to a particular major or track. They are then admitted to that track. Table 1, based on the comparison group in our study sample, shows the percentage of students admitted across the two types of majors. The split is about 40%-60% between academic and vocational majors, and there is no significant difference by gender. Within each major type, the specific track does vary by gender however – within vocational tracks, boys are more likely to be admitted in Technology, Agriculture and Visual Arts, while girls are far more likely to major in Home Economics. Within academic tracks, boys are more likely to gain admission to General Science than girls.

Switching majors upon enrolling is common, especially in rural areas where admission is less competitive. Table 1 shows that in the comparison group, among those who managed to enroll on their own, over a third of those admitted into a vocational track switched into an academic track (typically General Arts), and a quarter of those admitted in an academic track switched to a vocational track. This makes the pre-enrollment admission track an imperfect indicator of eventual track.

2.2 Background on Macroeconomic and Labor Market Context

The effects we measure should be interpreted as conditional on the macro-economic context at the time, as emphasized by Rosenzweig and Udry (2016). Our study participants began SHS in the 2008/2009 academic year at the earliest. Most participants who completed SHS did so and entered the labor market in July of 2012, and our latest follow-up survey was administered in 2016. Ghana had strong macro-economic performance through the first quarter of 2012, when GDP growth reached

an all-time high of 25.0%, but since 2012, GDP growth has fallen each year, reaching a fifteen-year low of 3.92% in 2015.

Government policies affecting the labor market also began to shift in 2012. In 2008, the government wage bill was 11.3% of GDP, which was the highest of the 12 West African countries surveyed by the World Bank. The Ghanaian government enacted a new salary scale for government employees in 2012, which raised government wage bill by 38% in one year (IMF, 2012). In 2015, the ballooning wage bill forced the Ghanaian government to impose a net hiring freeze on government employment.

The government also changed their secondary and tertiary education policy during our study period. For the school year 2009/2010, the government shortened the length of senior high school from 4 years to 3 years. The study participants were thus the last cohort enrolled in the four-year program. As a result, most of our participants graduated in a double cohort with the students who had enrolled a year later. In 2014, the government also changed their policy in nursing and teacher training programs. Between the 1980s and 2014, the government paid allowances large enough to cover all fees to all students enrolled in such programs, making them effectively fully subsidized for those admitted, and admissions in the programs were capped via a quota system. Both the allowances and the quotas were removed in 2014, taking into effect for the school year starting in September 2014. This was a year after the earliest date at which our study cohort could have enrolled in tertiary education-- they graduated from SHS in June 2012 and the earliest they could have applied for tertiary was Fall 2012 for a September 2013 start – but given the quotas, having to wait at least two years before getting admission was common, and so de facto the reform directly affected our study cohort. The incoming government elected in December of 2016 has vowed to bring back the allowances and quota system.

Overall, it seems plausible that the macro-economic conditions at the time the study cohort entered the labor market, and the government policy changes since the baseline, led both to lower overall labor-market performance for youth, and to lower treatment effects of education, than would have been present for a typical cohort, or would have been expected by participants at baseline.

2.3 Sampling Frame

The sample frame for the study was constructed as follows. First, 5 out of the 10 regions in Ghana

were included in the study.[10] Across these 5 regions, 54 out of the 170 districts in Ghana were selected because they had a high ratio of day students to boarding students (according to statistics from earlier years), and did not include the regional capital. We focused on day students for budget reasons and because as SHS becomes more common we expect more students to be attending day schools. Across these 54 districts, we selected a total of 177 publicly funded SHS that accept day students. These SHS represented about 60% of all SHS in the selected districts as of 2008. They are all co-ed, and typically have over 1,500 students, with an average pupil-teacher ratio of 22. Within each selected SHS, all students officially admitted into the SHS as of October 2008 were considered for eligibility.

To be considered eligible for the study, students needed to satisfy the following criteria: (1) To have been placed into one of the 177 study SHS by the Computerized School Selection and Placement System (CSSPS)[11]; (2) To have attended a Junior High School (JHS) in the same district (referred to as "in-district students") as the SHS they were admitted to; (3) To have not yet enrolled in any SHS by October 2008 (the school year had started in September).

Through visits to both senior and junior high schools, and various interviews with headmasters, teachers and other students conducted in October 2008, we identified 2,246 students eligible for the study. We also asked students why they did not enroll. 95% cited financial difficulties as the main reason, 2% cited pregnancies and 3% cited a variety of other reasons such as being injured, having a job or not liking the school they were placed in. Because students, headmasters and surveyors were unaware of the availability of scholarship at the time of initial surveying, we avoid problems of self-selection into the study sample. Each year fewer girls are admitted into SHS than boys, so, in order to ensure we had enough eligible girls in the sample, we had to include girls who had graduated from JHS in July 2007 (that is, one year prior to the rest of the sample) and had gained admission into one of the 177 sampled SHSs but had not enrolled.[12]

In early January, 2009, the 2,246 eligible students were called back to assess whether the student had enrolled or intended to enroll in an SHS for the second term of the 2008-2009 school year. A total of 182 students who either had enrolled or intended to enroll in SHS in the immediate term were dropped

[10] The three Northern regions and the Volta region were not selected because the Government of Ghana already ran a scholarship program in those regions at the time. Greater Accra was excluded given our focus on poorer areas.
[11] The CSSPS is a centralized, merit-based admission system, which is based on the deferred-acceptance algorithm of Gayle and Shapley (1962) (Ajayi, 2013).
[12] Estimated treatment effects on reported outcomes do not differ significantly between girls who graduated JHS in 2007 and those who graduated JHS in 2008.

from the sample prior to randomization. The final study sample is thus composed of 2,064 individuals (1,028 males and 1,036 females). Among the females, 746 had taken the JHS finishing exam in 2008 only and 290 had first taken it in 2007.

2.4 Scholarship Program

The scholarship program was implemented by Innovations for Poverty Action (IPA) in Ghana, in partnership with the Ghana Education Services (GES), the implementing arm of Ghana's Ministry of Education, and Senior High School staff.

The scholarship covered the full tuition and fees for a "day" student for four years. The scholarship was paid directly to the school and covered the entire school bill. A typical SHS bill for a day student is comprised of three items: government approved fees which are applied for all schools, PTA (Parents-Teachers Association) dues, and other levies and supplies, including exam fees. The latter two costs are school-specific. In addition to paying school fees, the scholarship also included payment for the final secondary school exam fee (WASSCE). Students who received the scholarship were only responsible for the cost of school materials, the cost of transportation to the SHS and feeding costs (plus boarding costs if they chose to board). The total amount paid by the scholarship program varied slightly across courses and school, but averaged 915 Ghana cedis per student who completed SHS.

Winners were notified by phone in January 2009 and encouraged to immediately report to their placement SHS (the SHS where they had been placed into based on their performance on the junior high school finishing exam). SHS Headmasters were informed of the names of scholarship winners by phone and they also received an official letter from the Director-General of the Ghana Education Service and IPA with details on the scholarship scheme (all schools agreed to participate). Each SHS received only few scholarship students (the median is 3 and the mean is 4, compared to cohort sizes of over 400 students on average).

2.5 Randomization

We stratified the final study sample of 2,064 youths by District, SHS, JHS, gender and BECE year, and a third of students within each strata (682 in total) were assigned to the "treatment group" (a scholarship) while the rest (1,382 students) was assigned to the "comparison group" (no scholarship). Note that the randomization was not stratified by track, but as discussed below, it was nevertheless fairly balanced.

2.6 Sample Maintenance and Attrition

To generate high follow-up rates, mobile phones were distributed at the onset of the study to every youth, and study participants were (and still are) sent mobile phone credit twice a year, as an incentive for them to keep the phone number we have on file active. Once a year, we attempt to reach all respondents in order to update their contact information. If they cannot be reached over the phone, we attempt to find them in person by going to their home area. In 2016, 8 years after the start of the study, we were able to reach and interview over 91% of our study sample by phone. 82% of those who could not be found by phone were then identified in home visits (in total 98% of the study sample were surveyed in just a few months, see Table A1). This is remarkably low attrition for a longitudinal tracking of this kind. Other examples of longitudinal tracking in developing countries have achieved 81% retention over three years (South Africa; Lam, Ardington and Leibbrandt, 2011), 95% (at the household-level) over five years (Indonesian Family Life Survey; Thomas, Frankenburg and Smith, 2002), 91% over seven years (Kenya; Duflo, Dupas and Kremer, 2015) and 84% over ten years (Kenya; Baird et. al 2011).

3 Data and Sample Characteristics

This section describes how we gathered data and the characteristics of our sample. Section 3.1 details the administration of the baseline survey, the detailed in-person follow-up survey in 2013 and the callback surveys in 2015 and 2016. Section 3.2 presents information on the baseline characteristics of the sample.

3.1 Data

We use three main data sources: a baseline survey, a follow-up survey administered after 5 years, and callback surveys (short status update surveys administered over the phone).

3.1.1 Baseline Survey

In November and December of 2008, prior to selecting the students for the scholarship, a baseline survey was administered to the youth him/herself as well as to one of the youth's guardians, usually female. The surveys included questions on perceptions of education, guardian literacy, values and

beliefs, as well as modules on members of the household, household living conditions, and assets. After the survey, each student received a mobile phone.

3.1.2 Detailed In-Person Follow-up Survey (2013)

A detailed in-person follow-up survey was conducted from April 2013 to August 2013. For many study participants, this follow-up survey falls in the gap year between the end of secondary high school in July 2012 and the possibility of enrollment in tertiary education in September 2013. The survey included modules on schooling, occupation, cognitive skills, labor market expectations, reproductive health and fertility, as well as attitudes and values, among other things. Most of these modules were fairly standard modules adapted from well-known surveys such as the Demographic and Health Surveys or the World Value Survey.

The only module we had to develop is the cognitive skills module. It included reading comprehension questions, as well as applied math questions (e.g. profit calculations, reading and interpreting a bar chart etc.). There were 17 questions, modeled on the OECD PISA (Program for International Student Assessment) exam, tailored to the Ghana context by the research team with inputs from the Assessment Services Unit (ASU) of the Ghana Ministry of Education.

3.1.3 Callback Surveys (2015 and 2016)

A yearly callback survey is conducted to update respondents' contact information. Starting in 2015, the callback survey included about 30-minutes of questions on major life outcomes.

The labor market section of the callback survey was substantially improved in the 2016 callback. In the 2013 in-person survey and the 2015 callback survey, surveyors asked respondents what their primary occupation/activity was (and if they had one, what their secondary and tertiary activities were) and then asked how much they earned from each of these activities. In the 2013 survey, 56.5% of respondents reported no earnings. In the 2015 survey, 51.7% of respondents reported no earnings. These are primarily respondents who answered "Nothing" as their primary activity, and hence were not asked about secondary activities nor asked about earnings. In follow-up qualitative interviews, respondents revealed that they earn money in ways that they do not consider an "activity" or "occupation". In the 2016 survey, surveyors asked respondents explicitly if they had any earnings over the past four weeks and how much they earned. In this survey, 43.0% of respondents reported no earnings. The difference in the amount of respondents reporting no earnings between the 2015 data

and the 2016 data was greater in the treatment group than in the control group. This may be because secondary school graduates searching for wage employment are less likely to report casual jobs they do here and there as an "activity". This would suggest that the 2016 data are more accurate, and so most labor market outcomes are analyzed using this data, though we report outcomes from the 2013 and 2015 surveys in Table A3 Panel C.

Since many respondents have zero earnings at endline, even in the 2016 survey, we cannot rely solely on log earnings as an indicator of returns to education. We report total earnings in Ghana cedis (GHX) earned per month, inverse hyperbolic sine of cedis earned per month (following Burbidge, Magee and Robb, 1988), the fraction of respondents with positive earnings, and log earnings conditional on earnings being positive.

Between these three surveys, we have data on many outcomes, which raises the issue of multiple inferences. We deal with this by constructing summary indices (Table A7 presents each variable in the composite indices along with their comparison mean and the treatment effects) and by presenting in Table A8 the sharpened q-values controlling for the false discovery rate (the expected proportion of rejections that are Type I errors) for p-values below the 0.1 threshold (Benjamini, Krieger, and Yekutieli, 2006).

3.3 Characteristics of Study Sample

Table 2 presents some summary statistics on the study sample. This data comes from baseline surveys administered to the respondents, as well as their guardians, in Fall 2008. As balance test, we show mean differences across groups for a battery of outcomes. Specifically, we run regressions of the form:

$$Y_i = \alpha_i + \beta T_i + \varepsilon_i \qquad (1)$$

where Y is the outcome of interest and T is whether or not the student won a scholarship. Since randomization was at the individual level, we do not cluster the standard errors. For each variable of interest, we show $\hat{\beta}$, the difference between the treatment and control group and its standard errors. We also present the mean outcome in the control group. We show the means and estimate the regressions overall in column 1, then separately by major-gender group in columns 2-9. We show the results with only regional fixed effects and a control for JHS finishing exam (BECE) score, but controlling for the stratification variables (district, SHS of admission, and student type dummies)

and/or other important baseline characteristics does not change the results (those results are shown in Table A9).

While randomization typically achieves balance, there are a few cases of unbalance measures. For females admitted to academic tracks, the treatment group was 7.1 percentage points more likely to have completed the BECE in 2007 rather than 2008 and had higher perceived returns to education (Table 2). For males admitted to vocational majors, the treatment group was 8.7 percentage points (significant at the 5% level) less likely to ever have had sex. These imbalances are not overly concerning, because we looked at 13 variables across four subgroups and thus, would expect a few variables to be significant by chance.

Students were on average 17 years old at the onset of the study. The mean score on the JHS finishing exam (BECE) was 62% for girls and 63% for boys; it was 63% for academic majors and 62% for vocational majors (Table 2).[14] Over 30% of students in the sample were experienced sexually at the start of the study, although with an important gender gap: over 45% of the girls reported having had sex, whereas only 18.5% of boys did.[15] Not surprisingly given that they are drawn from the more financially constrained, our study participants come from poor households. Over 40% of the students lived in households with no male head. Approximately 9% of household heads in the sample had only some primary education, about 40% had been to junior high, and about 13% had some secondary education (Table 2). Under 4% reported having any higher education, like university or vocational school.

Respondents had optimistic beliefs about the returns to secondary education at baseline: the average perceived percentage increase in earnings if one completes SHS compared to not completing SHS was 276% in the control group (Table 2). Academic major admits had higher expectations for the returns to SHS than vocational major admits (313% vs. 251%). These high expected average returns are not driven by outliers: 46% thought the returns would be at least 100%. Figure A1 shows that these expectations are largely driven by the belief that a secondary school degree is the gateway to a government job. Over 70% thought they would be a government employee or in a profession

[14] Mean BECE performance on four core subjects: Math, English, Science and Social Studies. We rescaled the score on a 0-100% scale, 100% being a perfect score.
[15] This gender gap is driven only in part by the presence of "older" girls in the sample (girls who had completed junior high school a year earlier, in 2007). For these older girls, the share sexually active at baseline is 60%, whereas for girls in the 2008 cohort, it is 39%, still twice that of boys.

dominated by government employees, especially teaching or being a nurse, by the age of 25 if they completed SHS (81% of females and 65% of males). This may be because these are the most ubiquitous types of permanent wage employees with which our rural sample interacts.

4 Impacts on Educational Attainment and Learning

This section presents the results on educational attainment and skills. Section 4.1 shows the effects on secondary and vocational education. Section 4.2 discusses the extent to which the experiment can be interpreted as approximating the impact of additional education. Sections 4.3 and 4.4 present the effects of the scholarship on learning and on tertiary education.

4.1 Secondary and Vocational Education

Considerable evidence suggests that participation in primary school is responsive to school fees, but less is known about how secondary school participation respond to fees, although the conditional cash transfer literature touches upon elasticity with respect to opportunity cost.[16]

We estimate the impact of the scholarship on educational attainment using regressions similar to equation 1. In the specifications reported in the text, we include regional fixed effects, a mean JHS finishing exam score and whether the JHS finishing exam score is missing, though all our results are robust to the inclusion of baseline controls (for all outcomes significant at the 10% level, we show the results with controls in Table A9). The results are presented in Figures 1 and 2 and in Table 3.

Seventy-five percent of scholarship winners enrolled in SHS immediately upon learning about the scholarship, almost four times the enrollment rate in the comparison group (Figure 1). By 2016, 74% of the scholarship winners had completed SHS, compared to 47% of the non-winners (Table 3). Thus, while a substantial share of those in the control group was able to put together, over time, the funding

[16] Cardoso and de Souza (2008), Glewwe and Olinto (2004), Gertler (2004), Ferreira, Filmer and Schady (2009) find fee reductions or conditional cash transfers (CCTs) increase primary enrollment. Barrera-Osorio, Linden, and Urquiola (2007) find fee reductions increased primary enrollment but find no effect on secondary enrollment. Angrist, Bettinger and Kremer (2006) find that vouchers for private secondary school increased completion rates. Barrera-Osorio et al. (2011) find effects of CCTs on secondary enrollment. Khandker, Pitt and Fuwa (2013) find that a stipend for secondary education increased enrollment among girls but had no effect among boys.

necessary to enroll, the scholarship program generates a large gap in educational attainment between winners and non-winners. Winning a scholarship increases the total time spent in SHS by 62% for men and 76% for women (Table 3). Note that repetition is extremely rare, affecting only 1% of students.

While the scholarship increased attendance in SHS, it led to a small reduction in attendance in technical and vocational institutes (TVI). In the comparison group, 4.6% of the women and 8.0% of the men had ever attended a TVI as of the 2015 survey. In the treatment group, only 2.6% of women, and 1.8% of men had attended TVI (Table A3).

Below we break down the increase in secondary school by gender, initial major, and score on the JHS test. The magnitude of the treatment effect is similar in percentage terms by gender, but greater in percentage terms among women, who have lower completion rates in the comparison group: the scholarship increased SHS completion rate from 42 to 68 percent among women (a 63% increase) and from 53 to 79 percent among men (a 49% increase) (see Table 3). The lower completion rate among women was primarily driven by the fact that about 28% of the women in the sample had completed junior high school one year *prior* to the scholarship program (the BECE'07 girls). Among those, take-up of the scholarship was significantly lower, at 56%, compared to 72% among women who had graduated in 2008 and 79% among men who had graduate in 2008 (see Figure 1). The gap in take-up with women from the 2008 cohort (56% vs 70%, see Figure 2, Panel A) suggests that the opportunity cost of schooling increases rapidly once out of school. Indeed an important predictor of *not* enrolling in SHS despite the scholarship among women in the treatment group is having started childbearing (results available upon request).

Turning to secondary schooling outcomes by major of admission, the scholarship increased the SHS completion rate from 49% to 79% (61% increase) for academic majors and from 48% to 72% (50% increase) for other majors (Table 3). The difference in treatment effects between the two groups is not statistically significant (the p-value testing for the equality between coefficient estimates in columns 4 and 7 is 0.19).

As can be seen on Figure 2 Panel B, the effect of the scholarship on SHS completion was seen throughout the distribution of initial performance – even students who had barely gained admission (in the lowest quartile of the performance on the JHS finishing exam) overwhelmingly took up the

scholarship; at the other end of the spectrum, almost half of the students who did very well on the exam did not attend secondary school in the control group, although the probability of attending school absent a scholarship does increase with achievement. The treatment effect is statistically significant at the 1% level at all quantiles of the test score distribution. A regression of SHS completion on JHS test score, treatment, and an interaction between JHS test score and treatment implies that being 10 percentiles higher in the national JHS test score distribution lowers the treatment effect on SHS completion by a statistically insignificant .003 percentage points (standard error .312), which suggests that these benefits were spread evenly throughout the distribution.

Knowing the responsiveness of secondary school participation to school fees sheds light on the fiscal cost per additional year of enrollment from making secondary education free. Given the findings above, and the distribution of junior high school exit exam scores, we estimate that in the absence of incentive effects on primary school students, making secondary education free could require paying for 15 years of secondary school for every additional year of education generated by marginal students. To see the logic, note that on average, scholarship winners spent 3.09 years in SHS, while non-scholarship winners spent 1.83 years in SHS. Therefore, the scholarship paid for 3.09 years of education for each 1.26 additional years of education. With a few assumptions, we can estimate the effect of a nation-wide free SHS policy using these results. We assume the 80% of qualified students who enroll in SHS nationwide in Ghana (Ajayi, 2014) would complete SHS with or without financial help and the 20% of qualified students who do not enroll in SHS behave like our sample.[17] With these assumptions, we calculate that a free SHS policy would pay for 15.13 years of schooling for each additional year of schooling attained and the fiscal cost per additional secondary school graduate would be approximately $7,600.[18]

Note, however, that the promise of free secondary school for students who pass the JHS finishing exam may incentivize more financially constrained students to study harder, allowing more of them to pass the exam and qualify for SHS (see Kremer, Miguel and Thornton (2009) for some evidence of such incentive effects.) In Ghana this is an important margin, since as of 2014 only about 40% of

[17] Since SHS in Ghana now lasts three years instead of four, we also assume that the 20% of qualified students who do not enroll would attend 75% of the years spent in SHS of our sample with the same ratio of infra-marginal to marginal years, and that full scholarships have the same effect on SHS completion rates irrespective of how long SHS is.

[18] Cost of the scholarship ($400) divided by expected additional graduates from one scholarship (which is the estimated treatment effect of a 26.3% increase in graduates multiplied by 20% of qualified students who do not enroll).

those who start JHS pass the finishing exam (see footnote 5). However, even if one makes quite generous assumptions about the extent to which primary school students would be incentivized to work harder to pass exams, the ratio of infra-marginal to marginal students is likely to be fairly high. For example, if one assumes that the promise of free primary education would lead one quarter of students who currently do not pass the primary school leaving exam to pass the exam, the ratio of years of education paid for to marginal years of education would fall from 15 to 6.

Targeting scholarships to students with lower SHS attendance, and lower incomes, and targeting females could increase the ratio of marginal to infra-marginal expenditure and reduce any regressive effects of scholarships for SHS. In the 2015-2016 academic year, the government operated a targeted scholarship program, which benefited around 38% of SHS students (Cann, 2016).

4.2 Using Scholarship Assignment as an Instrument for Education?

The effects of free education are of considerable interest in their own right, but they may also shed light on more general issues of the impact of education. In this subsection, we argue that non-educational channels of scholarship effects are likely to be small, and that while exclusion restrictions are probably not literally satisfied, instrumental variable estimates of the effect of education based on using random assignment of scholarship receipt are likely to be reasonable approximations of the causal effect of education.

In particular, while the scholarship represented a wealth transfer to infra-marginal families who would have paid for SHS in the absence of the scholarship, it also reduced earnings by children induced to attend SHS by the scholarship during the period of SHS enrollment. We estimate that these effects roughly offset each other in our context, so while we cannot rule out other channels of impact, treating later tertiary education, fertility and labor market effects as due to the effects of the scholarship on education is probably a reasonable approximation.

To see this, note that for those who would have paid for SHS themselves in the absence of a scholarship ("always takers"), the scholarship is akin to GHX[19] 1921 cash transfer to the family of the student. As they make up about 50% of the scholarship winners (based on the control group, 56%

[19] All numbers reported in 2016 GHX

would have enrolled anyway and 48% would have completed all four years absent the scholarship), this makes the wealth transfer GHX 960.5 on average for the treatment group as a whole.

In contrast, those who go to secondary school due to the scholarship ("compliers"), forego labor market earnings while in school and incur extra expenditure on school materials. Our estimates show that foregone earnings while in SHS (Table 3) and extra schooling expenditure over the lifetime of the scholarship (Table A3) totaled GHX 1204. Reductions in unpaid household labor by students induced to attend SHS by the scholarship presumably increase this amount, but unfortunately, we do not have data on this outcome.

Overall, the positive and negative effects on household income are comparable in size and seem to offset each other (though obviously the gains and losses are experienced by different households).

Even if the scholarship created some wealth transfer to treatment households, it is unclear how much this would affect participants' tertiary education, labor supply, fertility, or health behavior years later since any changes in wealth would presumably be shared among household members and the typical household had 5.6 members (Table 2). Moreover, due to credit constraints, many inframarginal households may have simply increased current consumption in response to scholarship receipt, rather than increasing investment, and thus potentially increasing future resources for scholarship winners.

Table A2 presents evidence on the impacts of the scholarship on the educational attainment of siblings, and we find no such effect, consistent with the hypothesis that wealth effects on household investments due to the scholarship are small.

Hypothetically, there could be psychological effects of winning a lottery that are different from the effects of a scholarship per se. However, as noted in Appendix Table A3, we do not see large effects on risk or time preferences. We also see no evidence that the scholarship affected confidence levels (see Figure A3).

Overall the non-education impacts of the scholarship appear modest, suggesting that using the scholarship as an instrument for years of education may provide a reasonable approximation of the true effect.

One other potential channel through which the exclusion restriction could be violated is if the scholarships affected later outcomes such as tertiary education, fertility, or labor market outcomes,

not only by increasing the chance that marginal students ("compliers") would attend secondary school, but also by affecting effort in school, or other determinants of academic success, by infra-marginal students ("always takers"). Hypothetically, scholarships could have increased effort for these infra-marginal students by making them less likely to have been temporarily kicked out of school for failure to pay school fees, or to have experienced stress around this possibility, or by making them more certain that they would be able to afford to complete school. Of course it is also possible that scholarships reduced effort among these students because they no longer had to fear withdrawal of financial support if they did not maintain high academic performance.

In the absence of any evidence on this issue, we will assume that net non-educational effects and effects on infra-marginal applicants can be neglected, and estimate:

$$y_i = a_i + \beta S_i + \varepsilon_i \qquad (2)$$

where S_i is the number of years of education for individual i and y_i is the outcome of interest. We use winning the scholarship as an instrument for years of education. In the remaining sections of the paper, we will typically compare the experimental estimates, interpreting those as effects of education, with OLS estimates for the effect on education based on variation in the comparison group. We also present IV estimates for most of the outcomes in Table A5.

One further complication is whether to interpret S_i as the number of years of total education or the number of years of secondary and tertiary education. The distinction arises because the scholarship prompted some substitution away from technical and vocational institute (TVI) education. Receiving a scholarship decreased the number of years of TVI education by .086 (Table 3). This means that the scholarship effect is likely due in some part to its effect on the type of education, as well as on the total number of years of education. If TVI education is of lower quality than regular secondary and tertiary education, then IV estimates of the impact of years of education will overestimate the impact of year of education, since the reduced form will conflate the impact of extra years of education and the change in education quality. IV estimates of the impacts of years of secondary and tertiary education, on the other hand, will underestimate the impact of secondary and tertiary education as long as TVI has some positive effects. In Table A6, we present IV estimates using years of total education and using years of secondary and tertiary education. These can be interpreted as bounds

on the bias from changes in TVI participation under the assumption that the effect of TVI is positive but less than the effect of regular secondary and tertiary education.

From an IV perspective, we will be estimating the local treatment effect of education on compliers. It is therefore of interest to know how compliers compare to always takers in background characteristics. Table A4 shows the difference in background characteristics between treatment and control groups, *among those who completed SHS*. Interestingly, we find no difference in the junior high school exit exam score, suggesting that compliers and always takers were performing equally, and confirming the premise that ability to pay fees is the key barrier to enrollment for compliers.

4.3 Learning Outcomes

Some have expressed concern about whether increases in access to education will lead to increases in learning, given the quality of schools (Pritchett, 2001). Knowledge and education may be correlated in non-experimental data, but perhaps those who could benefit from more education are already obtaining it.

Table 3 presents impacts on cognitive skills and learning outcomes. These results are based on oral tests administered as part of the 2013 in-person survey. Thus, these tests provide the effect after most study participants had completed or stopped going to SHS but before participants had a chance to enroll in tertiary education.

Overall, scholarship winners score 0.14 standard deviations higher on the reading test, 0.12 standard deviations higher on math tests and 0.15 standard deviations higher overall. Male and female vocational major admits had similar learning gains on the test (0.13 standard deviations increase for men; 0.16 standard deviations increase for women). Treatment effects on male and female academic major admits differed substantially however: for females, the scholarship increased test scores by .25 standard deviations, while for males scholarships increased test scores by only .05 standard deviations (the p-value on the test of equality is .19) (Table 3). Note that there are very large differences in scores by gender in the control group, with men vastly outperforming women. Thus despite very large gains among women in both types of majors, female scholarship winners are barely on par with male non-winners and far behind male winners in learning outcomes.

Learning gains are not simply due to winners trying harder on the test. We can show this in two ways. First, we find no differences between winners and non-winners on measures of IQ (Raven's matrices and digit span), which are supposed to not depend on education but obviously depends on effort or concentration (Table A3 Panel A). Second, at the time of the survey we had surveyors assess whether the respondent gave full effort on the test. Winners were 5.0 percentage points more likely to give full effort than non-winners (Figure A2). Within the comparison group, giving full effort is associated with a .69 standard deviations higher test score than not providing full effort. Since cognitive ability and effort on a test are likely to be positively correlated, this should be an overestimate of the effect of effort. Even if we assume this estimate is unbiased, it would imply that only 23% of the treatment effect comes from differences in effort. Interestingly, Figure A2 also shows a significant gender gap in effort provision on the test: women were 11 percentages points less likely to be rated as providing full effort (it was often harder for them to concentrate due to the presence of small children). Under the assumption above, only 21% of the very large (0.35 std. dev.) gender gap in performance in the control group would come from differential effort, however.

Besides impacts on cognitive skills, we also find significant impacts on general knowledge: scholarship winners scored higher on a series of questions related to current political affairs (both national and international). We also find that scholarship winners are more likely to know how to use the internet.[20]

While we find that scholarships increase learning levels, an ordinary least squares (OLS) estimate of the effect of education on knowledge among the comparison group appears to overstate the impact of education on learning relative to our experimental estimate. The OLS estimate implies that a year of additional SHS would result in .217 standard deviations higher test scores, while the IV approach discussed above leads to a point estimate of .124 standard deviations for an additional year of SHS (Table A5). When we include years of TVI, the OLS estimate is a .219 standard deviations increase from an additional year of education and the IV estimate is a .135 standard deviations increase from an additional year of education. One natural hypothesis is that OLS overstates the causal impact of education on learning because students with greater academic ability complete more education and do

[20] We show more results on technology adoption in Panel G of Table A3 as well as on financial inclusion in Table WA1. Education appears to be particularly important in inducing women to adopt modern technology. Female scholarship winners are more likely than non-winners to have a bank account by age 22 to have an email account by age 24 (significant at the 10% level) and to have a Facebook account. Female winners are also significantly more likely to follow the media. In contrast, the effect on these outcomes is insignificant for men.

better in technical skill, although this is partially accounted for since these results control for JHS finishing exam.

4.4 Tertiary Education

Gaps of multiple years between SHS and tertiary education are not uncommon in Ghana, so we may not yet be able to observe the long-run effect of scholarships on tertiary education, but as of 2016, 9.1% of the comparison group had ever enrolled in tertiary education. The treatment effect of the scholarship was an increase of 3.0 percentage points (33%) (Table 4). The treatment effect was particularly strong in percentage terms, in the subcategory of university education, where point estimates suggest that the scholarships nearly doubled enrollment as of 2016, albeit from a low base.

The overall increase in tertiary enrollment also conceals important heterogeneity. Treatment effects on tertiary education are concentrated among those admitted to academic tracks. Among this group, scholarship winners are 5.3 percentage points more likely to have ever enrolled in a tertiary institution on a base of 11.9%, for a percentage gain of 48%, while the effect on vocational majors is small and insignificant (Table 4).

Within the group of students admitted to academic tracks, the treatment effect is heavily concentrated among women. The scholarship nearly doubled the likelihood of women in academic tracks ever enrolling in tertiary education (increase of 9.3 percentage points or 98% of the control mean; s.e. = .033 percentage points) (Table 4). In contrast, the scholarship increased the likelihood of men ever enrolling in tertiary education by a statistically insignificant 1.3 percentage points (10.3% of 12.6% control mean; s.e. = .033). The differences in point estimates is significant at the 10% level. Note that the effect on women in the academic track is large enough that provision of free secondary education led to equalization of the rates of tertiary attendance by gender within our full sample. We do not see this full equalization for other outcomes, such as SHS completion.

Overall, as of 2016 the scholarship had led to a 1.25 year increase in total years of education on average (Table 4). Years spent in SHS increased by 1.26 (Table 3), years spent in tertiary education increased by .075 (Table 4) and years spent in TVI decreased by .086 (Table 3). The change in total years of education is similar for women and men and for academic majors and vocational majors. Quantitatively, the change is mainly concentrated in secondary school. Our reduced form and IV estimate thus likely pick up to a large extent the change in time spent in secondary school (Angrist and Imbens, 1995).

Despite this sizeable treatment effect, marginal students (those induced to complete SHS by the scholarship) struggle to move from SHS completion to tertiary enrollment relative to infra-marginal students (those who could finish SHS without a scholarship). Even if we assume that the entire treatment effect on tertiary enrollment is concentrated among marginal students, we find that only 11.4%[21] of those induced to complete secondary school by the scholarship went on to tertiary education compared to 19.1% of the inframarginal students.[22,23] The gap is particularly pronounced for vocational admits: 6.1% continuation to tertiary among marginals vs. 16.6% among inframarginals (17.6% vs. 22.5% for academic admits). This is not because marginal students are drawn from a lower part of the initial score distribution (recall the finding in Table A4 that compliers have similar BECE scores than always takers). One natural hypothesis is that since tertiary education costs more than secondary education, and subsidies for tertiary education (especially vocational teaching and nursing colleges) were cut back during our study period, students who were financially constrained at the SHS level were financially constrained at the tertiary level.

There is however important heterogeneity by gender. The point estimates imply that the males induced to enroll in SHS by the scholarship were negatively selected relative to males who would have gone to SHS in any case, whereas marginal females induced to graduate from secondary school by scholarships were just as likely to go on tertiary education as infra-marginal females who would have graduated from secondary anyway. In particular, the continuation rate to tertiary is 20.2% among infra-marginal males, but only 4.2% among marginal males. In contrast the ratios are 17.8% among control females (infra-marginal students) and a virtually identical 18.7% for the treatment effects on females (marginal students) (Table 3 and Table 4). This discrepancy could be read as supporting the hypothesis that most males who could make it to tertiary education are already being supported to enter SHS by their families, but that the same is not true for females. Ghana has some gender quotas at the tertiary level, so all these results should be interpreted in that context.

[21] Ratio of treatment effect on SHS completion and ever enrolled in tertiary
[22] Ratio of comparison means of SHS completion and ever enrolled in tertiary
[23] If scholarships increased the chance that infra-marginal students went on to tertiary education, for example through income effects, the implied rate at which marginal students enrolled in tertiary education would be even lower.

5 Impacts on Marriage, Fertility, and Health Behavior

5.1 Fertility and Marriage

Scholarships lead to lasting drops in women's fertility and marriage rates. While there are some impacts on men, they are insignificant by age 25 (Table 5).

Scholarships dramatically changed women's fertility and marriage outcomes. At age 25, treatment women are 9.1 percentage points (26% of the control mean) less likely to have ever lived with a partner. They are 10.7 percentage points (18%) less likely to have ever been pregnant, 11.5 percentage points (18%) less likely to have had an unwanted pregnancy and have had .217 (27%) fewer children. The effects are seen across the two types of major.

We cannot reject the hypothesis that IV and OLS estimates for the fertility impact of education are equal. Using treatment as an instrumental variable for years of education, we find that increasing combined years of SHS and tertiary education by one year leads to 0.16 fewer births before age 25 and increasing total years of education by one year leads to .17 fewer births (Table A5). While the OLS estimate is slightly higher (0.19 for secondary/tertiary; .20 for total education), they are not significantly different. Osili and Long (2008) estimate that one year of primary education in Nigeria leads to a reduction of 0.26 births before the age of 25. The base birth rate in the Nigerian study was significantly higher, however, at 2.35 births before age 25, against only 0.8 births before age 25 in our context, thus in percentage terms our effect is larger (20-21% vs. 11%). Appendix table A6, which looks at other years, show that these substantial effects have been persistent and significant since 2013 and the point estimates have generally grown over time. These fertility and marriage results are consistent with the results of a randomized experiment that reduced the cost of access upper primary school in Kenya, and found that the onset of childbearing was also delayed, with no-catch up in the two or three years following school exit (Duflo, Dupas and Kremer, 2015).

Because the great majority of first pregnancies are reported to be unwanted, the decline we see in women is almost exclusively a decline in unplanned, out-of-wedlock pregnancies. The finding that the hazard of childbearing in the treatment group remains lower for scholarship winners once they are out of school suggests that this is not simply due to an "incarceration effect," postponing fertility for a few years as in Black, Devereux and Salvanes (2008). It is also not simply due to the fact that reducing the cost of secondary education increases the opportunity cost of pregnancy while of school-age.

Point estimates suggest treatment also reduces fertility and marriage for boys but by a smaller amount than for girls. By age 25, the estimates on all the fertility outcomes (number of children, ever lived with partner, ever had a pregnant partner and unwanted pregnancy) are negative but insignificant for boys, and significantly smaller than for girls. In previous years, some significant negative effects were only observed in one year, at age 24.

The more likely potential mechanisms posited by the literature for the effects of education on fertility are: (1) increase in the opportunity cost of bearing and raising children (Becker, 1991); (2) the ability to make better choices thanks to better decoding of information (Rosenzweig and Schultz, 1989); and (3) the fact that education may shape/ change preferences for children. Consistent with channel (1), we find that women winners earn more than women non-winners, which presumably increases the opportunity cost of a child. And consistent with channel (2), we find large increases in learning for both men and women, and we also see that scholarship winners are more likely to report adopting other preventative behavior such as bed net use, handwashing with soap and use of mosquito repellent (Table 5). There is some evidence for channel (3) in our sample, but only for females in academic majors, for whom the scholarship reduced desired fertility by age 50 by 0.21 children (a 5.8% decrease) (Table 5).

5.2 Health Behavior

Winning a scholarship leads to safer health choices (Table 5). Overall, scholarship winners adopt significantly less risky (self-reported) sexual behavior (-0.052 SD on an index of 9 questions, presented in table A7), have a lower index of STI exposure (-0.074 SD), and more preventative health behaviors (0.116 increase on an index questions on three behavior, hand-washing with soap, bednet use, mosquito repellent use). The impacts on self-reported sexual behavior (riskiness index and exposure to STI index) are significant only for men, but for women we observe actual decline in pregnancies and unwanted pregnancies.

6 Impacts on Labor Market Outcomes

Labor market effects are presented in Table 6. Before presenting treatment effects, it is worth noting the bleakness of labor market outcomes in this group. Only 44% of women and 68% of men in the

control group earned any money in the month preceding the survey in 2016. In this section, we first report reduced form treatment effects on labor market effects across the entire sample. We then discuss labor market impacts of scholarships for students who had been admitted to vocational tracks (section 6.2). In section 6.3, we analyze scholarship effects among those who had been admitted to academic tracks. This analysis is complicated by the higher rate at which the treatment group is still in school, and we develop bounds for those who are not currently enrolled in formal education. Finally, we compare the experimental estimates to OLS estimates in the comparison group (section 6.4).

6.1 Overall Labor Market Effects

Despite the fact that scholarship winners were still more likely to be enrolled in tertiary education by the time they were surveyed in 2016, they were more likely to earn positive income in the last month. Scholarship winners are 5.5 percentage points (s.e. = 2.5 percentage points) more likely to have had any earnings in the past month on a base of 56 percent (Table 6). They are 6.4 percentage points more likely to either have positive earnings or be in school on a base of 63 percent. Overall, they worked 9.97 more hours per month (significant at the 10% level) on a base of 82.7 hours. As a result, they appear to have larger earnings on average, although this result is sensitive to functional form. Winning a scholarship increased the inverse hyperbolic sine of Ghana cedi earnings (a transformation that reduces the weight put on outlying values) by a significant .308 (s.e. = .145), and the raw average earnings by an insignificant 7.7 Ghana cedis (se: 10.933).

There is no evidence of gains on the intensive margin: point estimates suggest that scholarship winners earn a statistically insignificant 1.9% less conditional on having any earnings (of course this cannot be interpreted causally since more winners have positive earnings).

Note that all these effects may underestimate the causal impact on labor market outcomes for students who were not induced to go on to additional formal study/training to the extent that the additional 2.5 percent of students in the treatment group who were in formal study/training due to winning the scholarship would have had more positive labor outcomes than average had they not been in school. Below, we construct bounds for these effects.

Scholarship winners are more likely to report actively searching for a job. Conditional on not having a job they are 14.2 percentage points more likely to report searching for job and conditional on already having a job they are 5.7 percentage points more likely to report searching (Table 6 panel D).

In general, these overall effects mask disparities between academic tracks and genders, which we turn to below.

6.2 Labor Market Effects for Students Admitted to Vocational Majors

For students admitted to vocational majors, there was virtually no impact of scholarships on the likelihood that students admitted would be enrolled in formal study/training at the time of the survey. This makes the interpretation of labor market impacts for this group fairly straightforward. We also find no differences by gender, so below we discuss the results for males and females combined.

Scholarships increased earnings for this group, with this accounted for by increased hours rather than increased earnings per hour. Scholarships cause a .505 increase in inverse hyperbolic sine earnings. In absolute terms, vocational winners have 25.9 GHX more earnings in the past month than non-winners, a 24 percent increase (significant at the 10% level).

Scholarship winners' greater earnings are entirely accounted for by additional work hours: scholarship winners work 14.9 more hours per month on a base of 87.0 hours (Table 6, panel B). In turn, the increase in work hours is accounted for by the probability of doing any work – the extensive margin. Winners are 8.8 percentage points (16%) more likely to have any earnings on a base of 56.4% and 11.6 percentage points (22%) more likely to have worked over 10 hours in the past month on a base of 53.8%. Winners do not work significantly more hours conditional on working, they do not earn more conditional on working, and they do not earn more per hour (of course, these differences are not causal estimates of the effect on earnings or hours for those who work, since there is selection on who works; but this underscores that, as a matter of accounting, the earnings increase is driven by the increased probability of being employed). Estimates of quantile treatment effects on earnings show no consistently significant impacts at higher quantiles, suggesting no clear effect on the intensive margin of earnings as of 2016, though the estimates are noisy and we cannot reject potentially large effects (Table A3).

The increases in employment due to winning a scholarship are concentrated in particular sectors of employment. Winners are 8.5 percentage points more likely to work for a wage. Male winners are much more likely to work as a day or seasonal laborer. Winners are no more likely to work in their own or their family's business.

We calculate the financial rate of return to SHS for vocational majors by finding the internal rate of return that equates the initial costs of SHS with the subsequent benefits. On the cost side of the financial return calculation, there are additional SHS fees paid, additional school costs, and foregone earnings per scholarship winner. The cost of SHS school fees for four years in nominal terms was GHX 915. If we assume the real cost of school fees is constant across the four years and adjust for inflation using the CPI (World Bank, 2016), then the average yearly school fees would be 480.36 in 2016 GHX. Thus, the additional 1.19 years that vocational admits spent attending SHS in the treatment group (Table 3) cost approximately GHX 142 yearly. For additional school costs, we add up the in-kind expenses, transportation costs, and other school fees (school materials etc.) from the respondent's last term in SHS as of the 2013 survey. Assuming that these costs apply to all other terms that the respondent was in school, we adjust for inflation and the number of terms the respondent attended. We find that scholarship winners paid GHX 94.75 more yearly (153.01 in 2016 GHX) (Panel F; Table A3). In terms of foregone earnings during their 42 months of SHS, we find that scholarship recipients earned 9.15 less GHX monthly in 2009, 7.71 less in 2010, 4.35 less in 2011 and 1.14 less in the first six months of 2012 (Panel F; Table A3). Adjusting for inflation, scholarship winners had GHX 296.66 (in 2016 GHX) in foregone earnings in 2009, 201.86 in 2010, 101.70 in 2011 and 12.21 in the first six months of 2012. Assuming the school fees and additional school costs are spread evenly across the 4 years of school, the cost of schooling in 2016 GHX was 592.54 in 2009, 497.74 in 2010, 397.58 in 2011 and 308.09 in 2012. (This will slightly overestimate costs, since respondents presumably saved on TVI fees.) On the benefit side, scholarship winners earn GHX 25.92 more per month (Table 6), so GHX 311.05 yearly. We assume these benefits persist throughout a 30-year working career (2013-2042). With these assumptions we find that there is 13% return to SHS for vocational major admits.[24] If we assume scholarship winners did not begin earning more until 2016, then the return is 10%. With a 3% discount rate, an SHS education would be worth GHX 3,417,. With a 5% discount rate, an SHS education would be worth GHX 2,090.

[24]The equation with costs on the left and benefits on the right:

$$\frac{593}{(1+ROR)} + \frac{498}{(1-ROR)^2} + \frac{398}{(1-ROR)^3} + \frac{308}{(1-ROR)^4} = \frac{311}{(1-ROR)^5} + \cdots + \frac{311}{(1-ROR)^{34}}$$

6.3 Labor Market Impacts for Students Admitted to Academic Majors

Among students admitted to academic majors more scholarship winners are still in school. It is thus too early to draw strong conclusions about the labor market impact of scholarships on these students. Nonetheless, we can report some preliminary results. Table 6 columns 4-6 present raw (regression adjusted) differences between labor markets outcomes between winners and non-winners. One variable that is easy to interpret is the effect on having positive earnings or being in school. For the sample as a whole, the point estimate is an insignificant 4 percentage point increase (on a basis of 63%). For females, winning a scholarship increased this by 8.7 percentage points on a base of 50.5% (significant at the 10% level) (Table 6; Panel C); for males the point estimate is negative and insignificant.

For the other outcomes, we do have labor market outcomes for everyone (including zeros if they are not working while in school), and the estimates in the entire sample are unbiased estimates of the labor market impact as of the date of the survey, but for those who are still studying, they are not indicative of what they will earn in the long run. The estimates suggest effects on earnings, hours, and participation that are insignificantly different from zero, and significantly smaller from the impact for those admitted in the vocational tracks. Because the treatment group is more likely to be enrolled in formal study or training, this estimate could however be a downwardly biased estimate of the effects on labor market impacts for those who are not enrolled (the difference between academic and vocational admits for the non-selected outcome, "earning or in school", is not significant). But if we focus on those whom the scholarship did not induce still being in school in 2016, we need to take sample selection into account.

If one assumes that the correlation between being induced to attend formal education/training by the scholarship and potential labor market outcomes (if not enrolled) is between 0 and 1, then we can construct an upper bound and lower bound for the treatment effect on the workers who would not be induced to attend further education regardless of whether or not they receive a SHS scholarship (Angrist, Bettinger, and Kremer 2006). The lower bound is simply the point estimate, excluding those who are currently enrolled in formal study or training. The upper bound excludes in addition the top 8.0 percentiles of the labor market distribution in the control for women and the top 2.6 percentiles

for men, because those are the percentiles we assume would have been induced to still be in formal school/training by a scholarship, had they been in the control group.[25]

We report these bounds in Table 7. The point estimates go in opposite direction for women and men, so the average is not particularly illuminating. Note however that the upper bounds of the impacts are no longer significantly different between the vocational and general admits.

We consider the results for men and women separately. Using the lower bound on the correction for the scholarship's effect on formal study/training, point estimates of treatment effects on labor market outcomes for females admitted to academic majors are typically positive, although not statistically significantly different from zero. Winners have .337 greater (inverse hyperbolic sine) earnings, are 5.3 percentage points more likely to have positive earnings in the past month (Table 7; Panel A) and worked 19.7 more hours in the past month (Table 7; Panel B), though these differences are not statistically significant, and the lower bound on raw earnings is GHX -6.6 per month (with a standard error of 27).

The upper bounds on treatment effects for female academic majors who were not induced to still be in formal study/training by the scholarship are strongly positive and often statistically significant. The upper bound suggests that winners experience a large increase in inverse hyperbolic sine earnings (.802). (Table 7; Panel A).

For men in academic majors, there is still some concern about difficulties of interpretation, since the point estimate of the treatment effect on being enrolled in formal study/training at the time of the study is non-trivial at 2.6 percentage points (although it is not statistically significantly different from zero) (Table 6; Panel C). Both the upper and lower bounds indicate that labor market effects are negative for those who do not attend study/training, though generally statistically insignificant. The decrease in their inverse hyperbolic sine earnings ranges from .199 to .315 (Table 7; Panel A), the decrease in the likelihood of positive earnings ranges from 1.8 percentage points to 2.7 percentage points (Table 7; Panel A) and the decrease in hours worked in the past month ranges from 5.1 to 14.1 (Table 7; Panel B), but almost all of these bounds are not statistically significantly different from zero.

[25] Note that this "formal study/training" variable report in the first row of panel C (slightly) differs from the current enrollment in tertiary variable reported in Table 4 because it also includes a few students still enrolled in secondary education.

Lower bounds indicate decreases in total earnings in the past month (54.57 cedis; 25% of the comparison mean) and log earnings if any earnings (23.9%) which are significant at the 10% level.

One natural hypothesis for scholarship winners' low hours worked and likelihood of positive earnings is that completing senior high school raises the quality of the reservation job that winners will accept. Male academic major scholarship winners are 8.1 percentage points less likely to be day or seasonal laborers (Table 6; Panel C), which supports this hypothesis, although their stated reservation wage does not change (Table 6; Panel D). Winners are 17.9 percentage points (57%) more likely to be searching for a job conditional on earning money, which may reflect their reluctance to fully commit to the low wage employment opportunities currently available to them (Table 6; Panel D).

An alternative explanation is that men in academic majors are still attempting to be admitted into tertiary education – they may be re-sitting the WASSCE exams or studying to qualify for diploma programs that require entry tests.

6.4 Comparison between OLS and IV Estimates

OLS estimates within the comparison group are consistently lower than the IV estimates of the labor market impact of education (Table A5). The IV estimates understate the effect of a year of education on labor market outcomes because of the higher amount of treatment individuals studying or training, but they can be used as a lower bound on the true effect. For earnings, the OLS estimates imply that an additional year of education (excluding TVI education) would decrease inverse hyperbolic sine earnings by .04, while the IV estimates implies a .231 increase. The OLS estimates implies that an additional year of education would decrease the likelihood of earning money in the past month by 1.0 percentage points, while the IV estimate is a 4.1 percentage increase. These disparities widen slightly when we include years of TVI education in our definition of years of education. [26]

For vocational majors (where there are no significant confounding effects from studying or training), IV estimates exceed OLS estimates by more than in the full sample. The IV approach estimates that an additional year of education (excluding TVI education) increased inverse hyperbolic earnings by .487 and the likelihood of positive earnings by 8.5 percentage points, while the OLS estimates are only a .028 increase in inverse hyperbolic sine earnings and a .2 percentage point increase in likelihood of

[26] If a year of TVI is more efficacious than a year of regular education in increasing earnings, an IV for earnings will underestimate the impact of years of education, and this will further strengthen the finding that OLS estimates of the impact of years of education on earnings are less than suggested by IV estimates.

positive earnings per additional year of education. These results are robust to including TVI education. One interpretation is that this difference supports Lang (1993)'s hypothesis that the labor market returns to education for financially constrained students may be larger than for the average student.

6.5 Satisfaction

Skeptics of secondary education warn of a potentially large cohort of disaffected students, disappointed by the contrast between their expectations going into education and their outcomes coming out. Given their high initial hopes, the relatively low proportion of SHS graduates who went on to tertiary programs, and the difficulties faced by others in finding a higher-paying job that requires a secondary education, a concern is that the scholarship raised hopes and aspirations, and thereby could have generated disappointment and frustration in the years that followed secondary school graduation. This does not appear to be true in general, although the evidence does not point towards a large positive effect either: a satisfaction index (covering life satisfaction, financial satisfaction and a comparison of their life to others) shows a small insignificant positive treatment effect, as does a mental health index (Table 8). Scholarship winners are as likely as losers to think that they can change their life, and that their life is as good as that of others. The only striking result is that among those who have a job, scholarship winners are much less satisfied with it (a decline of -0.279 on a scale that ranges from 1 to 5, SE: 0.081), but also more confident they can get a better one (an increase of 0.059 on an index that ranges from 1 to 5, SE; 0.034). This increased dissatisfaction is present both among academic admits winners (who, in fact, are searching on the job), but also for vocational admits winners (who are more likely to have a job, and not significantly more likely to be searching on the job).

How to interpret these satisfaction questions is not entirely clear, especially since education itself may affect how respondents understand the questions. There is only a limited overlap between treatment effects estimated for objective outcomes discussed in prior sections and treatment effects on reported satisfaction. Women, who overall benefitted more from the scholarship on most dimensions, appear to be more satisfied (0.104, SE: 0.057), especially with their finances, and the difference between male and female treatment effects are significantly positive. The only group with a positive treatment effect on satisfaction index (0.188, SE 0.074) is the group of vocational-admit women, who also experienced the largest positive earnings treatment effect. In contrast, the academic admit women tend to experience reductions in satisfaction from treatment comparable to that of males. However, for males, the point estimates for males on the satisfaction variables are all negative (though not significant) and

very similar in the vocational and general admit tracks, despite very different labor market treatment effects.

Overall, access to free SHS does not appear to be associated either with deep frustration or significantly happier lives. The jobs graduates have found so far have not met the high expectations they had for education at baseline, but their hopes appear to be still alive.

One potential policy implication of the huge discrepancy between stated expectations of the effect of secondary education and the estimated actual effect is that governments or others may wish to provide more accurate information. In particular, it may be appropriate to inform students that within general arts, those with low scores on the JHS exam have a low probability of entering tertiary education. In some ways, our finding of a large gap between the expectations of returns to education and actual returns is the logical converse of Jensen's (2010) finding that students in the Dominican Republic underestimate the returns to education. These seem like mirror image findings, but in fact they have similar implications. When people have inaccurate expectations about a given impact of education, there may be a case for providing more accurate information.

7 Conclusion

With primary school enrollment rates getting close to 100% in most countries, policy attention has shifted to secondary school. Ghana is a case in point, with the newly elected government promising to make senior high school free. Yet very little is known on the causal impact of secondary education in developing countries.

Using a randomized controlled trial in which a random subset of qualified but financially constrained students in rural Ghana were awarded secondary school scholarships, and detailed outcomes data collected after 5, 7, and 8 years, we find that scholarships increase secondary school completion rates by 30 percentage points, and that secondary education does impart significant learning gains, enable healthier behaviors, and delays fertility and marriage, in particular for women.

The scholarship also significantly increased enrollment in tertiary education at the time of our endline (after 8 years) from 8% to 11%. Despite the fact that the scholarship winners were more likely to still

be enrolled in school at the time of the survey, they were also 5 percentage points more likely to be earning a positive income, and their (hyperbolic sine) earnings were higher.

The medium run impacts on tertiary education and labor market outcomes depend upon the type of track or major. For academic major admits, for the time being at least, the impact is felt primarily in terms of access to tertiary education, which increases from 11% to 16%. By age 25, we cannot reject the hypothesis of no impact on labor market participation or earnings, either in the full sample of those admits (including those still enrolled, who naturally earn very little), or for those who are not currently enrolled in tertiary education (even with the most optimistic bounds). Understanding the full impact on labor market outcomes will, however, require waiting until the tertiary students have entered the labor market. What's more, it is possible that the types of jobs that academic track secondary school graduates obtain have a steeper wage profile than for others, in which case the full impact on labor market outcomes will require waiting even longer.

Among students admitted to vocational majors, the results are already much clearer. Scholarship winners are no more likely to attend tertiary education, but they are much more likely to have positive income around age 25. For these students, winning a scholarship increases total earnings by 19%, with effects driven by scholarship winners' increased probability of having work, rather than by either greater earnings per hour or greater hours conditional on working. For vocational admits, assuming a constant treatment effect on earnings over time, we estimate that the financial rate of return of going to SHS is 13%. While this is a partial equilibrium estimate, this is likely to be an underestimate due to some special features of the time period, namely a challenging macroeconomic climate and a double-cohort of graduates.

One important thing to note is that we cannot currently determine whether the differing effects in academic vs. vocational majors are due to the different curricula in these majors or due to the characteristics of the students who are admitted to these majors.

We find more positive treatment effects for women relative to men along a number of dimensions, although given our small sample size these differences are not always significant on a variable-by-variable basis. Treatment effects for women are greater on learning, on tertiary enrollment, on fertility and marriage, and on labor market outcomes. One possible hypothesis is that households are more

inclined to send their sons to senior high school than their daughters, and therefore at the margin there are more girls who could benefit from senior high school but will not go in the absence of a scholarship than there are boys. Consistent with this, women have lower rates of senior high school secondary attendance in Ghana.

By age 25, treatment effects on labor market outcomes are also (significantly) larger for the vocational track students than for the academic track students, although this is to some extent driven by larger tertiary school enrollment among scholarship winners admitted into academic tracks (the upper bound effects for those not enrolled are not significantly different in the two groups). While the confidence intervals are consistent with a wide range of estimates, the low point estimates contrast with the enthusiastic expectations of our students and their parents at baseline, and with our own priors as well.

For students and parents, these high expectations seemed to have a lot to do with the hope that secondary school would open the way to tertiary education and high paying government jobs. While this is true for a minority, the overall fraction of secondary school graduates attending tertiary education remains fairly low in this sample (14% among scholarship winners). Few of these secondary school graduates will meet their ambition of becoming teachers or entering other occupations requiring tertiary education and commanding high rents. To the extent that government jobs are in fixed supply, there will be excessive entry into competing for these jobs since entry creates a negative externality for other applicants. This implies that there may be socially excessive entry into academic majors.

In the traditional human capital model, education imparts skills that should increase productivity in the labor market. Although we find an increase in a cognitive skill test scores for scholarship winners within the group of academic admits, our labor market results are consistent with the hypothesis that these skills have not improved labor market prospects for the academic admit scholarship winners who were not induced to enroll in tertiary education, at least not yet. One possibility is that scholarships increased their employability (as it did for the vocational admits), but for academic admits senior high school education may have discouraged males from taking up jobs as day or seasonal laborers, though this is not reflected in lower (elicited) reservation wages.

In this view, the (partial equilibrium) distributional implications may thus be very different in different subsamples. Vocational education seems to have improved labor market outcomes at the bottom of the distribution, helping those who did not have jobs obtain them, but not necessarily helping those who would have had jobs anyway earn more per hour or obtain more hours. In contrast, among academic track admits, scholarships might eventually improve the upper tail of outcomes, particularly for women, by helping more of them go on to tertiary education. However, the data are consistent with the possibility that the bottom tail of the distribution for males in particular was not helped, at least by 2016.

Currently, students enrolled in general arts, by far the most common academic major pay less for education than either students to vocational subjects or students in general science. Our results so far would support correcting this imbalance and perhaps even doing more to encourage matriculation in vocational or scientific tracks, especially if one puts more weight on welfare at the bottom of the distribution.

These results will change over time: those who have gone to tertiary will graduate and enter the labor market. Employment rates will likely rise in the rest of the sample. This will both increase all wages, and give us a larger and more representative sample to estimate any productivity impacts of education. The scholarship winners from academic tracks who are neither enrolled nor working may find the job they are looking for, or stop searching. Estimating the long-run returns to free secondary education, overall as well as by gender and track, will require surveying our study sample in future years. This underscores the importance of very long-term longitudinal follow up. We are planning to continue interviewing this cohort for as long as possible.

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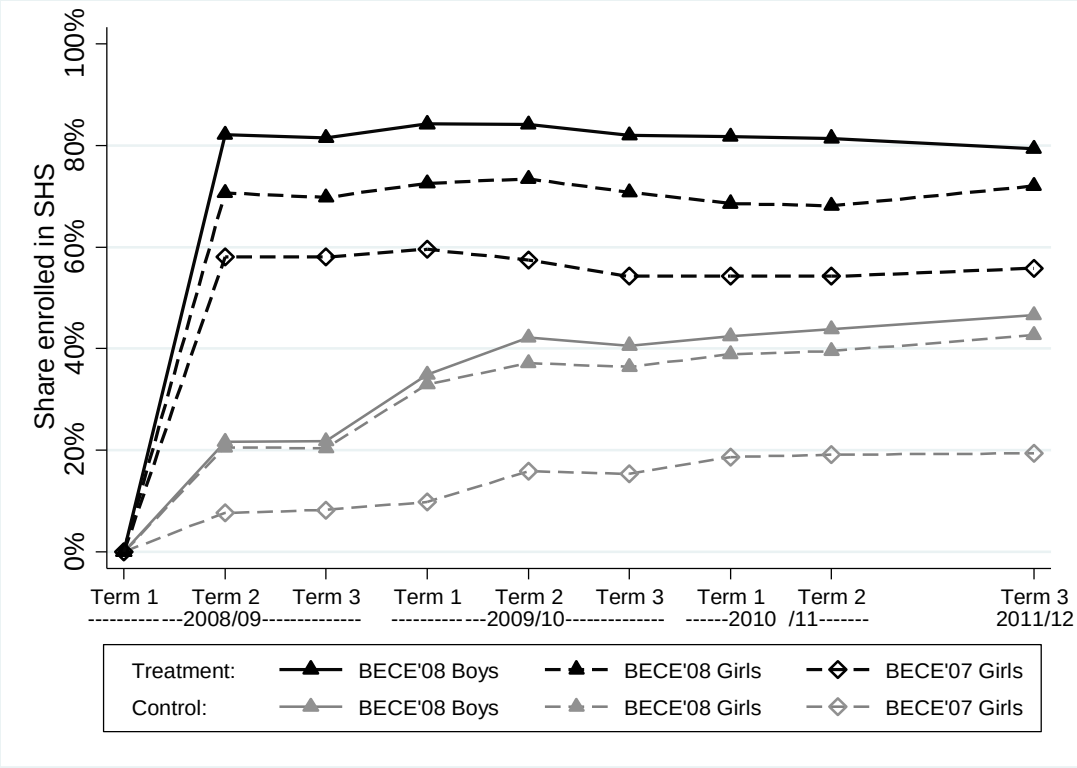
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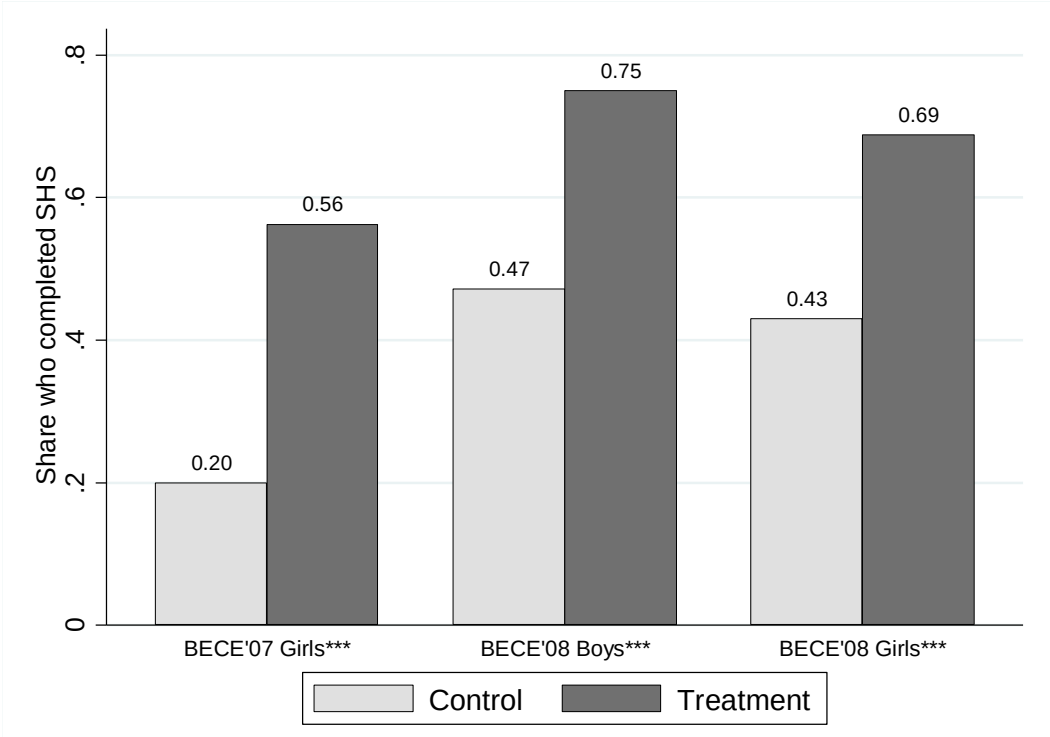
Figure 1: Impact of Scholarship on Share Enrolled in SHS



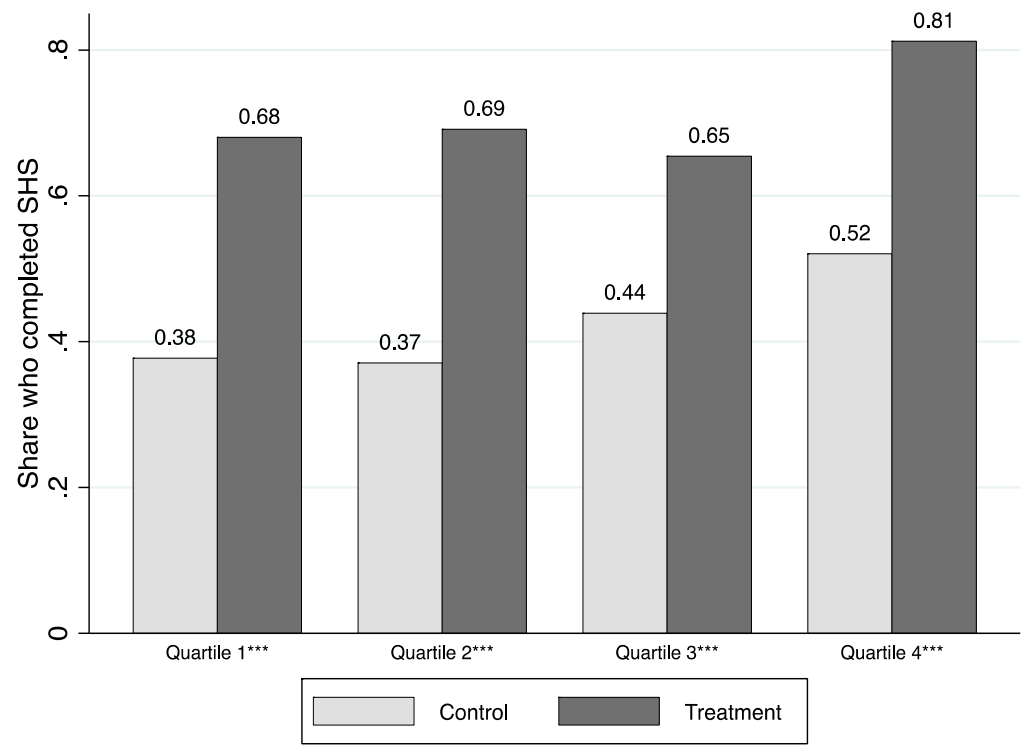
Notes: Data from yearly phone surveys. The scholarships were awarded at the beginning of Term 2 of the 2008/2009 academic year. We split the sample into three types of students: boys who sat for the BECE in May 2008, girls who sat for the BECE in May 2008, and girls who sat for the BECE in May 2007. See text for details.

Figure 2: Effect of Scholarship Treatment on Secondary School Completion by July 2015

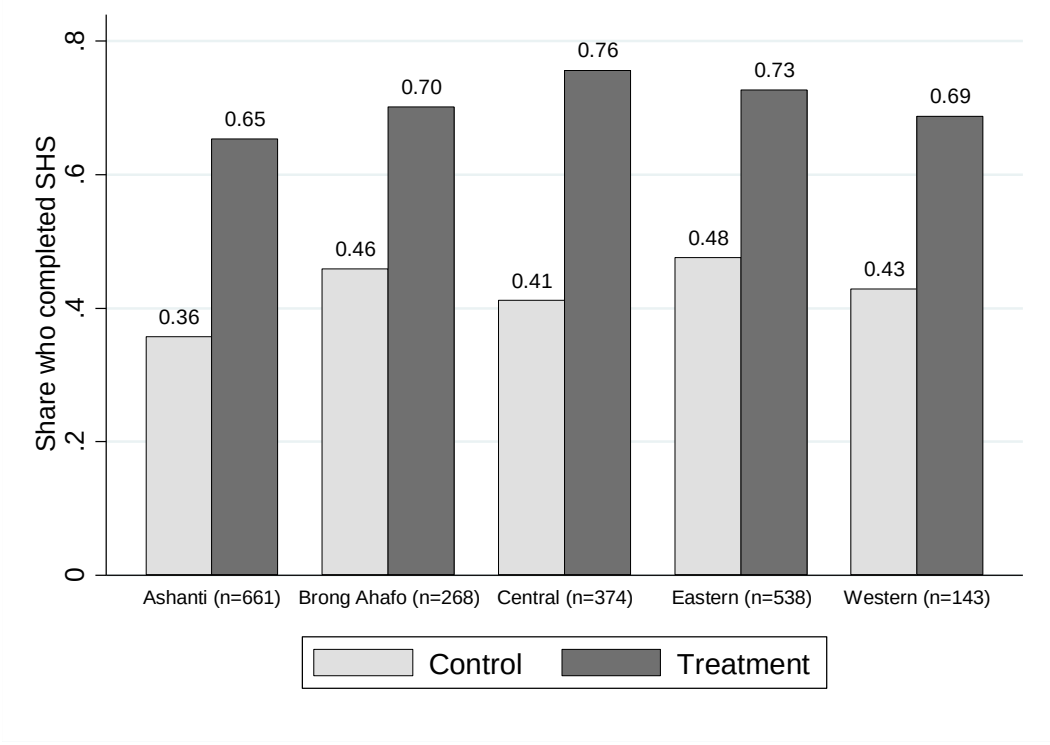
Panel A. by gender and cohort



Panel B. by quartile of entrance exam score



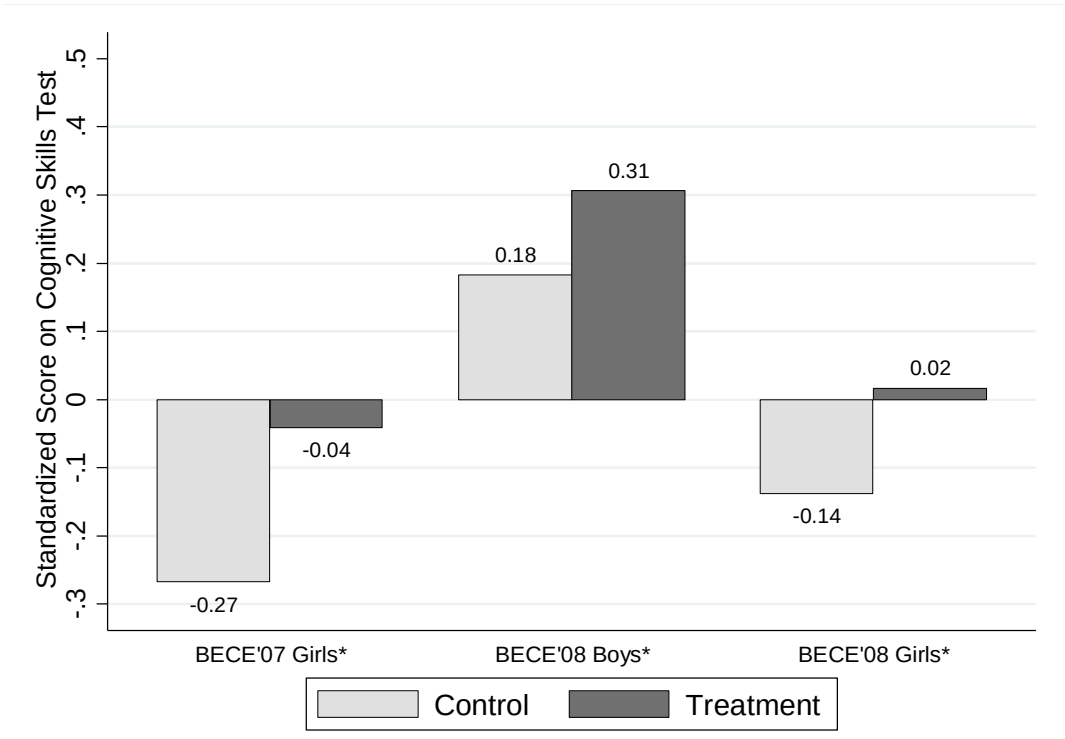
Panel C. by Region



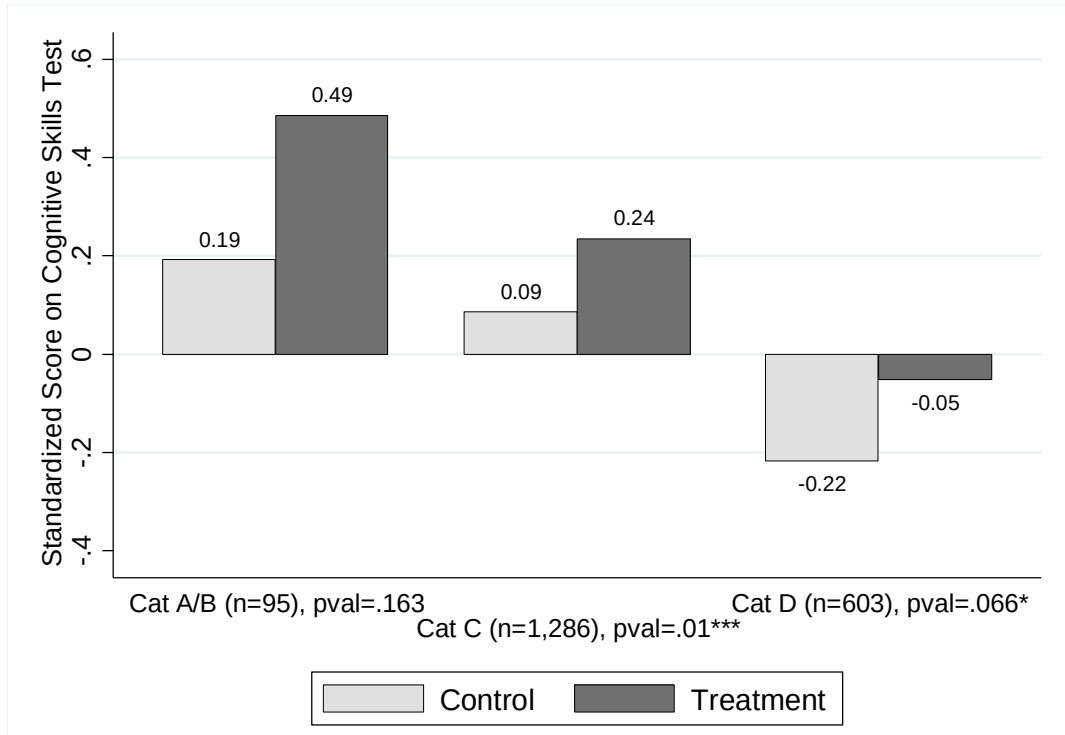
Notes: The difference between the Treatment and Control bars represents the effect of the scholarship treatment. *** indicates significance at the 1% level. All differences in Panel C are significant at 1% level, stars omitted due to space constraints.

Figure 3: Effect of Scholarship Treatment on Cognitive Skills after 5 years (2013)

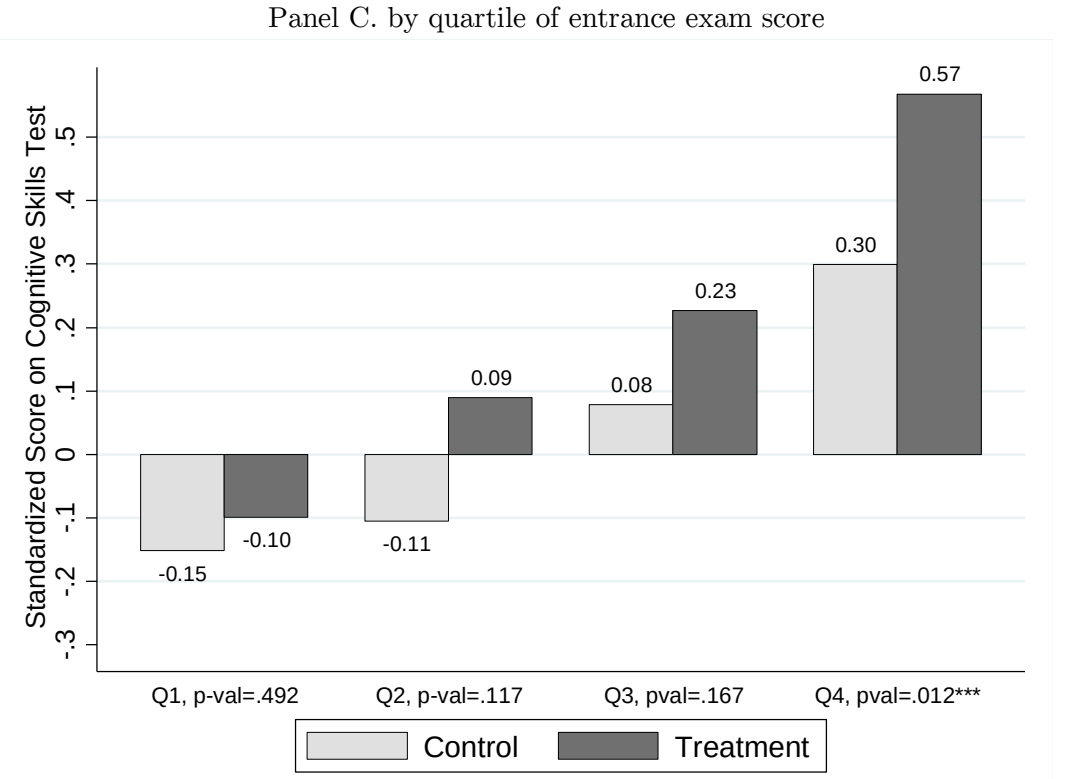
Panel A. by gender and cohort



Panel B. by category of the SHS of admission

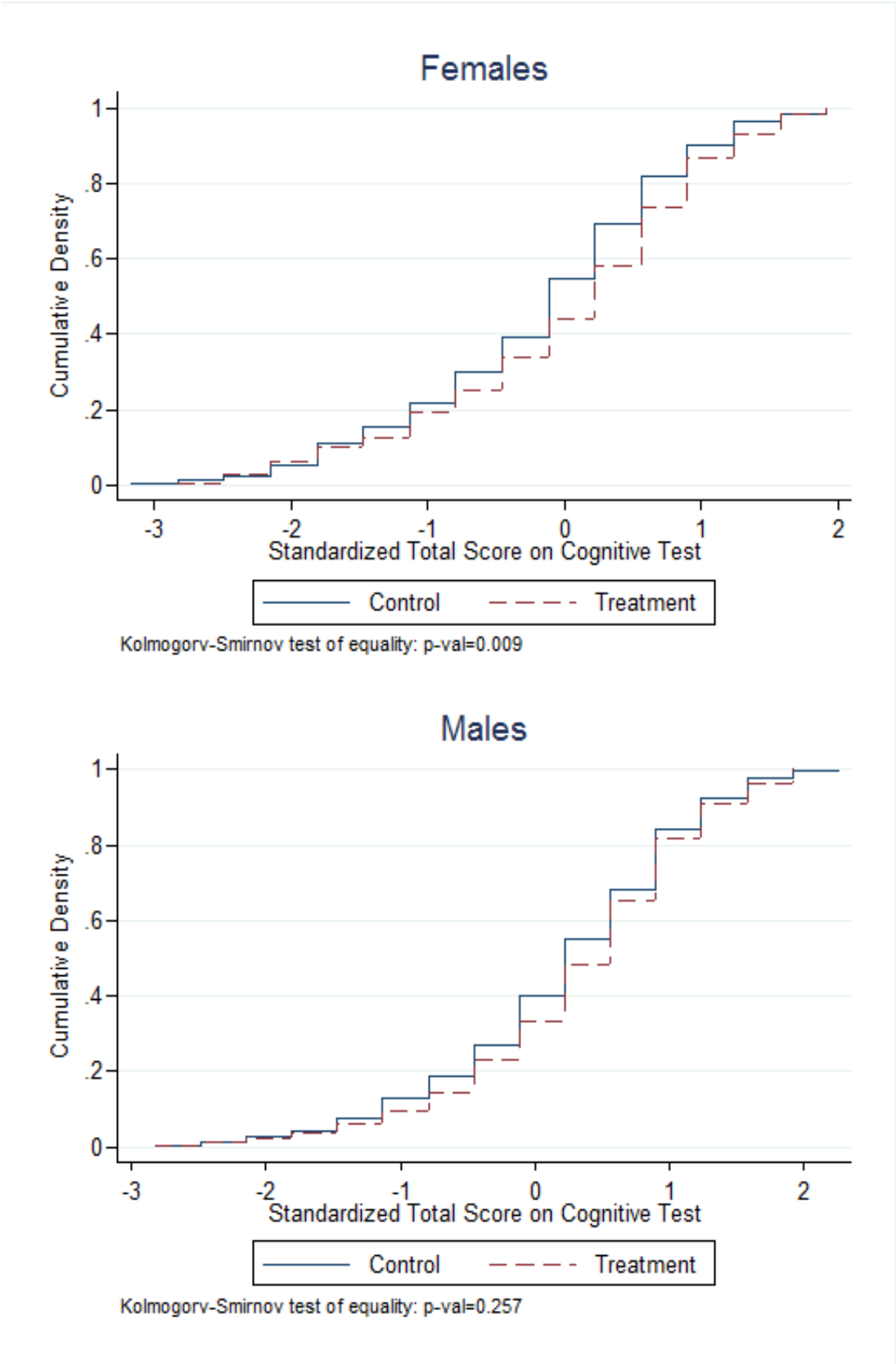


Panel C. by quartile of entrance exam score



Notes: Data from 2013 in-person follow-up. The difference between the Treatment and Control bars represents the effect of the scholarship treatment. The p-value for a test of equality between the two bars is presented in the x-axis label. ***,**,* indicate significance at the 1%, 5% and 10% level respectively.

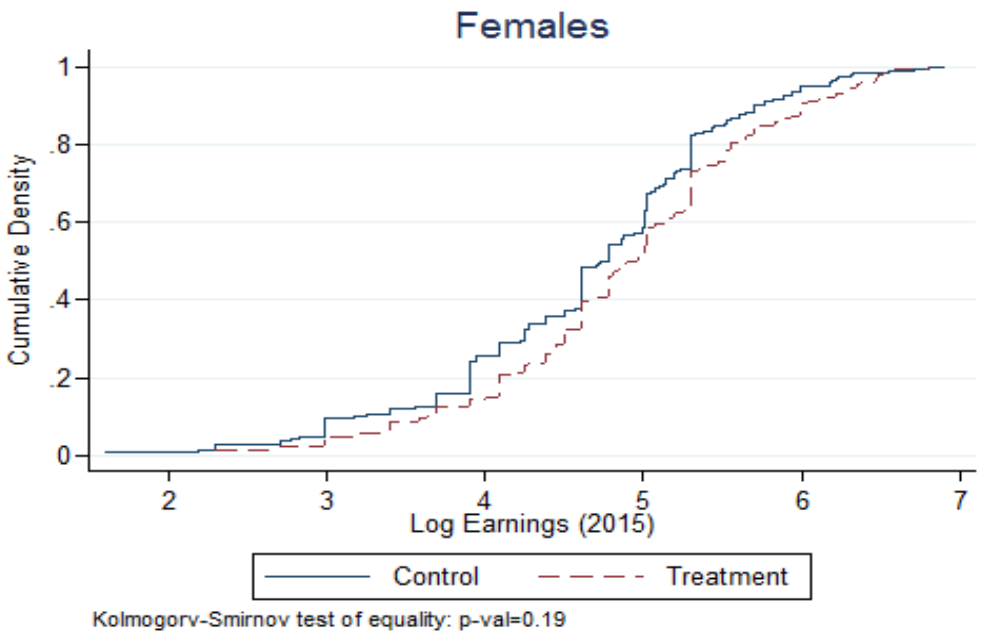
Figure 4. Effect of Scholarship on Cognitive Test Score Distribution after 5 years

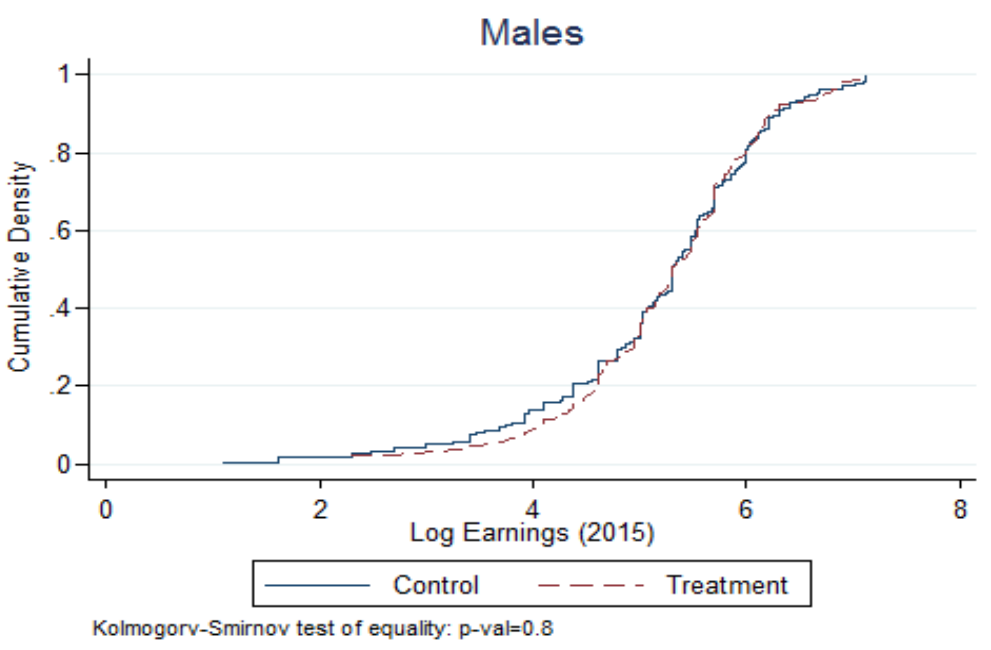


Notes: Data from 2013 in-person follow-up survey. The cognitive test included 17 questions designed to gauge literacy, reading comprehension, basic math skills and more advanced math skills. See Table 5 for details. Total score shown was normalized to mean 0 and standard deviation 1 in the control group. Test included 17 questions, each weighed equally.

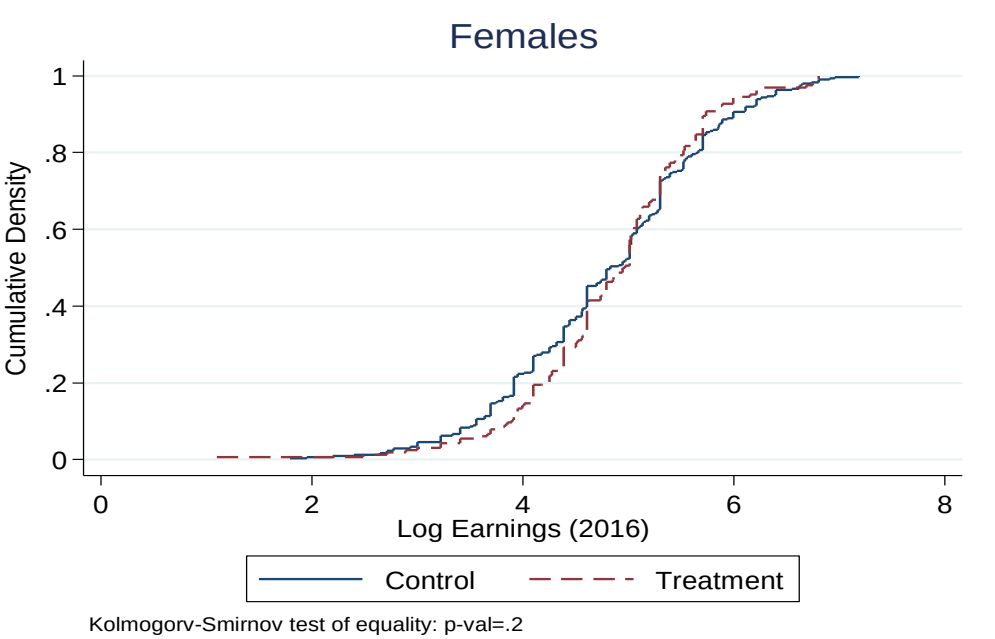
Figure 5. Effect of Scholarship on Log Earnings in past month (for those reporting earnings)

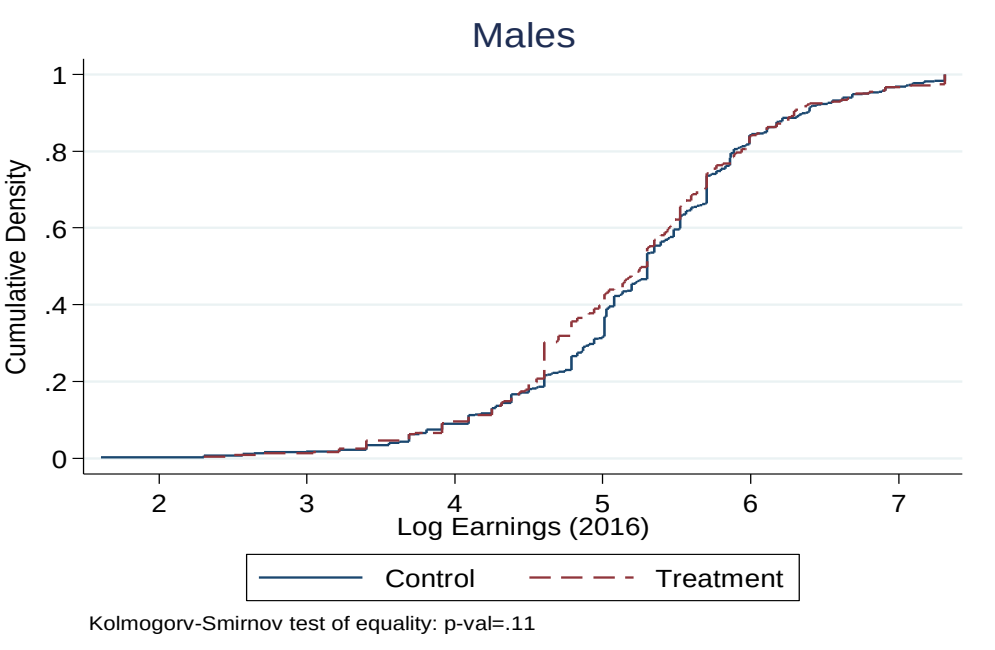
2015





2016





Notes: Data from 2015 (left) and 2016 (right).

Table 1: Initial Majors and Switching (Control Group)

	All	Female	Male	P-val
	Mean	Mean	Mean	Male =
	(Std. Dev.)	(Std. Dev.)	(Std. Dev.)	Female
	(1)	(2)	(3)	(4)
Panel A. Academic Majors				
Admitted to Academic Major	0.405	0.417	0.393	.383
	(0.491)	(0.493)	(0.489)	
Admitted to General Arts	0.373	0.392	0.353	.131
	(0.484)	(0.488)	(0.478)	
Admitted to General Science	0.033	0.026	0.040	.091*
	(0.178)	(0.158)	(0.195)	
Ever Enrolled in SHS (% of admitted to academic)	0.570	0.532	0.610	.066*
	(0.496)	(0.500)	(0.489)	
Switched to Vocational Major (% of ever enrolled)	0.258	0.221	0.291	.242
	(0.438)	(0.417)	(0.456)	
Panel B. Vocational Majors				
Admitted to Vocational Major	0.595	0.583	0.607	.383
	(0.491)	(0.493)	(0.489)	
Admitted to Business	0.214	0.171	0.259	0.000***
	(0.410)	(0.377)	(0.438)	
Admitted to Home Economics	0.156	0.289	0.019	0.000***
	(0.363)	(0.454)	(0.137)	
Admitted to Agriculture	0.114	0.083	0.147	0.000***
	(0.318)	(0.276)	(0.354)	
Admitted to Technology	0.062	0.013	0.112	0.000***
	(0.240)	(0.113)	(0.315)	
Admitted to Visual Arts	0.048	0.027	0.071	0.000***
	(0.215)	(0.162)	(0.256)	
Ever Enrolled in SHS (% of admitted to vocational)	0.544	0.477	0.610	0.000***
	(0.498)	(0.500)	(0.488)	
Switched to Academic Major (% of ever enrolled)	0.385	0.436	0.345	.056*
	(0.487)	(0.497)	(0.477)	
Observations	1382	702	680	

Notes: Data for "Admitted to..." from 2008 baseline survey. "Switching to..." variables constructed by comparing 2008 baseline track with track recorded in 2013 follow-up. Data for "Ever Enrolled in SHS..." from 2016 follow-up. Columns 1, 2, and 3: control group means with standard errors presented below in parentheses, with ***, **, * indicating significance at 1, 5 and 10%.; Column 4: the p-value on a test of whether control group means for females and males are equal.

Table 2: Sample Characteristics

	Combined			Academic Major Admits			Vocational Major Admits		
	All	Female	Male	All	Female	Male	All	Female	Male
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Age in 2008									
Treatment-control differenc	-0.064	-0.048	-0.084	-0.179	-0.168	-0.199	0.012	0.022	0.003
Standard error	(0.072)	(0.103)	(0.102)	(0.114)	(0.163)	(0.160)	(0.094)	(0.133)	(0.132)
Comparison mean	17.369	17.314	17.426	17.297	17.260	17.337	17.418	17.353	17.483
Completed BECE in 2007									
Treatment-control differenc	0.005	0.020	0.000	0.021	0.071	-0.001	-0.006	-0.015	0.000
Standard error	(0.016)	(0.021)	(0.021)	(0.026)	(0.033)**	(0.033)	(0.021)	(0.027)	(0.027)
Comparison mean	0.139	0.274	0.000	0.130	0.249	0.000	0.145	0.291	0.000
BECE exam performance									
Treatment-control differenc	0.002	-0.001	0.004	0.002	-0.002	0.004	0.002	-0.000	0.004
Standard error	(0.004)	(0.005)	(0.005)	(0.006)	(0.008)	(0.008)	(0.005)	(0.007)	(0.007)
Comparison mean	0.623	0.618	0.628	0.629	0.624	0.634	0.620	0.614	0.625
No male head in the household									
Treatment-control differenc	0.009	-0.029	0.047	-0.004	-0.034	0.026	0.017	-0.029	0.062
Standard error	(0.023)	(0.033)	(0.033)	(0.037)	(0.052)	(0.051)	(0.030)	(0.042)	(0.042)
Comparison mean	0.425	0.455	0.395	0.409	0.418	0.398	0.437	0.481	0.393
Number of HH members									
Treatment-control differenc	-0.099	-0.148	-0.054	-0.154	-0.173	-0.141	-0.061	-0.121	0.001
Standard error	(0.107)	(0.153)	(0.152)	(0.170)	(0.242)	(0.238)	(0.139)	(0.197)	(0.197)
Comparison mean	5.659	5.617	5.703	5.758	5.719	5.801	5.592	5.544	5.639
Highest education of HH head: primary education									
Treatment-control differenc	-0.005	-0.014	0.003	-0.016	-0.023	-0.009	0.002	-0.008	0.012
Standard error	(0.009)	(0.013)	(0.013)	(0.015)	(0.021)	(0.021)	(0.012)	(0.017)	(0.017)
Comparison mean	0.042	0.047	0.037	0.047	0.055	0.038	0.039	0.042	0.037
Highest education of HH head: JHS									
Treatment-control differenc	-0.009	-0.017	-0.000	0.027	-0.004	0.057	-0.032	-0.024	-0.040
Standard error	(0.022)	(0.032)	(0.032)	(0.035)	(0.050)	(0.050)	(0.029)	(0.041)	(0.041)
Comparison mean	0.353	0.356	0.350	0.364	0.377	0.351	0.345	0.342	0.349
Highest education of HH head: SHS									
Treatment-control differenc	0.007	0.014	0.001	0.009	0.039	-0.022	0.006	-0.003	0.015
Standard error	(0.015)	(0.021)	(0.021)	(0.023)	(0.033)	(0.033)	(0.019)	(0.027)	(0.027)
Comparison mean	0.111	0.106	0.116	0.117	0.092	0.143	0.107	0.116	0.098
Highest education of HH head: TVI									
Treatment effect	-0.009	-0.013	-0.005	-0.018	-0.016	-0.018	-0.003	-0.010	0.004
standard error	(0.008)	(0.012)	(0.012)	(0.013)	(0.019)	(0.019)	(0.011)	(0.015)	(0.015)
Comparison mean	0.036	0.040	0.031	0.041	0.048	0.034	0.032	0.035	0.029
Highest education of HH head: tertiary									
Treatment effect	-0.009	-0.021	0.002	-0.031	-0.031	-0.029	0.005	-0.013	0.023
standard error	(0.010)	(0.014)	(0.014)	(0.016)**	(0.022)	(0.022)	(0.013)	(0.018)	(0.018)
Comparison mean	0.050	0.057	0.041	0.059	0.072	0.045	0.043	0.047	0.039
Perceived returns to SHS (%)									
Treatment effect	14.639	32.581	-1.955	28.345	127.740	-63.218	9.162	-21.081	37.407
standard error	(27.590)	(39.666)	(38.439)	(44.181)	(63.396)**	(61.584)	(35.285)	(50.742)	(49.043)
Comparison mean	276.102	272.429	279.719	313.141	293.534	334.161	250.519	256.771	244.710
Perceived returns to SHS education>100%									
Treatment effect	0.008	0.000	0.017	0.041	0.083	0.008	-0.010	-0.046	0.023
standard error	(0.025)	(0.036)	(0.035)	(0.040)	(0.058)	(0.056)	(0.032)	(0.046)	(0.045)
Comparison mean	0.463	0.478	0.448	0.485	0.502	0.466	0.448	0.460	0.436
Ever had sex									
Treatment effect	-0.027	0.001	-0.044	-0.006	-0.009	0.020	-0.041	0.004	-0.087
standard error	(0.022)	(0.030)	(0.029)	(0.034)	(0.047)	(0.046)	(0.028)	(0.038)	(0.038)**
Comparison mean	0.328	0.454	0.199	0.304	0.420	0.176	0.345	0.478	0.214
Observations	2060	1033	1027	833	422	411	1227	611	616

Notes: Data from 2008 baseline. The estimated treatment effects for the full sample (Col. 1), female admits (Col. 2), male admits (Col. 3), academic major admits (Col. 4), female academic major admits (Col. 5.), male academic major admits (Col. 6), vocational major admits (Col. 7), female vocational major admits (Col. 8), male vocational major admits (Col. 9) are in the first cell row; standard errors are in the second cell row in parentheses, with ***, **, * indicating significance at 1, 5 and 10%; comparison group means are in the third cell row; all regressions control for region fixed effects. Mean of BECE exam is mean of performance on four core subjects: Math, English, Science and Social Studies. We rescaled the score on a 0-100% scale, 100% being top performance.

Table 3: Secondary Education and Learning Outcomes

	Combined			Academic Major Admits			Vocational Major Admits		
	All	Female	Male	All	Female	Male	All	Female	Male
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Ever enrolled in SHS (2016)									
Treatment effect	0.302	0.292	0.309	0.324	0.314	0.329	0.287	0.277	0.296
Standard error	(0.022)***	(0.031)***	(0.031)***	(0.035)***	(0.049)***	(0.048)***	(0.028)***	(0.040)***	(0.040)***
Comparison mean	0.558	0.504	0.615	0.574	0.540	0.610	0.548	0.478	0.618
p-value on equality of effect	*(5)=(6)=(8)=(9): .857*	*(2)=(3): .693*			*(5)=(6): .825*		*(4)=(7): .413*	*(8)=(9): .745*	
If enrolled, enrolled in academic major (2013)									
Treatment effect	-0.036	-0.030	-0.041	0.071	0.100	0.046	-0.130	-0.145	-0.119
Standard error	(0.030)	(0.044)	(0.040)	(0.041)*	(0.060)*	(0.056)	(0.035)***	(0.053)***	(0.047)**
Comparison mean	0.533	0.584	0.491	0.742	0.779	0.709	0.385	0.436	0.345
p-value on equality of effect	*(5)=(6)=(8)=(9): .002*** (2)=(3): .853*				*(5)=(6): .514*		*(4)=(7): .000****	*(8)=(9): .718*	
Completed SHS (2016)									
Treatment effect	0.263	0.263	0.261	0.302	0.261	0.341	0.236	0.265	0.208
Standard error	(0.023)***	(0.033)***	(0.033)***	(0.037)***	(0.052)***	(0.051)***	(0.030)***	(0.043)***	(0.042)***
Comparison mean	0.475	0.418	0.533	0.489	0.478	0.502	0.465	0.376	0.552
p-value on equality of effect	*(5)=(6)=(8)=(9): .264*	*(2)=(3): .969*			*(5)=(6): .275*		*(4)=(7): .164*	*(8)=(9): .345*	
Years spent attending SHS (2016)									
Treatment effect	1.261	1.236	1.272	1.379	1.298	1.448	1.181	1.198	1.154
Standard error	(0.086)***	(0.121)***	(0.120)***	(0.135)***	(0.190)***	(0.190)***	(0.111)***	(0.157)***	(0.156)***
Comparison mean	1.827	1.622	2.041	1.897	1.813	1.988	1.778	1.486	2.077
p-value on equality of effect	*(5)=(6)=(8)=(9): .651*	*(2)=(3): .835*			*(5)=(6): .576*		*(4)=(7): .256*	*(8)=(9): .843*	
Average monthly earnings between Jan 2009 and July 2012 (2013)									
Treatment effect	-8.775	-5.943	-11.752	-12.051	-8.504	-16.008	-6.534	-4.161	-8.934
Standard error	(1.655)***	(2.336)**	(2.324)***	(2.584)***	(3.643)**	(3.632)***	(2.155)***	(3.044)	(3.025)***
Comparison mean	13.741	9.968	17.670	15.248	10.225	20.638	12.712	9.788	15.696
p-value on equality of effect	*(5)=(6)=(8)=(9): .099* (2)=(3): .078**				*(5)=(6): .144*		*(4)=(7): .101*	*(8)=(9): .266*	
Years spent attending TVI (2016)									
Treatment effect	-0.086	-0.046	-0.131	-0.099	-0.024	-0.178	-0.078	-0.060	-0.098
Standard error	(0.031)***	(0.043)	(0.043)***	(0.048)**	(0.068)	(0.068)***	(0.040)**	(0.056)	(0.056)*
Comparison mean	0.170	0.104	0.238	0.145	0.067	0.231	0.186	0.130	0.243
p-value on equality of effect	*(5)=(6)=(8)=(9): .406*	*(2)=(3): .163*			*(5)=(6): .110*		*(4)=(7): .741*	*(8)=(9): .632*	
Standardized score, Reading test (2013)									
Treatment effect	0.140	0.158	0.116	0.136	0.179	0.090	0.139	0.142	0.133
Standard error	(0.047)***	(0.067)**	(0.067)*	(0.074)*	(0.104)*	(0.104)	(0.062)**	(0.087)	(0.086)
Comparison mean	-0.000	-0.096	0.100	0.102	0.029	0.181	-0.070	-0.184	0.046
p-value on equality of effect	*(5)=(6)=(8)=(9): .945*	*(2)=(3): .656*			*(5)=(6): .543*		*(4)=(7): .974*	*(8)=(9): .944*	
Standardized score, Math test (2013)									
Treatment effect	0.119	0.173	0.055	0.128	0.233	0.008	0.112	0.130	0.088
Standard error	(0.048)**	(0.068)**	(0.067)	(0.076)*	(0.106)**	(0.105)	(0.063)*	(0.088)	(0.088)
Comparison mean	-0.000	-0.191	0.199	0.019	-0.179	0.233	-0.013	-0.199	0.177
p-value on equality of effect	*(5)=(6)=(8)=(9): .491*	*(2)=(3): .214*			*(5)=(6): .131*		*(4)=(7): .868*	*(8)=(9): .732*	
Total standardized score (2013)									
Treatment effect	0.151	0.196	0.097	0.155	0.247	0.053	0.146	0.160	0.127
Standard error	(0.048)***	(0.068)***	(0.067)	(0.075)**	(0.105)**	(0.105)	(0.063)**	(0.088)*	(0.087)
Comparison mean	-0.000	-0.175	0.183	0.066	-0.102	0.247	-0.045	-0.227	0.140
p-value on equality of effect	*(5)=(6)=(8)=(9): .620*	*(2)=(3): .296*			*(5)=(6): .191*		*(4)=(7): .926*	*(8)=(9): .794*	
National political knowledge standardized score (2013)									
Treatment effect	0.083	0.104	0.048	0.063	0.141	-0.037	0.094	0.078	0.104
Standard error	(0.048)*	(0.067)	(0.066)	(0.076)	(0.104)	(0.104)	(0.063)	(0.087)	(0.087)
Comparison mean	0.000	-0.239	0.250	0.068	-0.179	0.332	-0.046	-0.281	0.194
p-value on equality of effect	*(5)=(6)=(8)=(9): .642*	*(2)=(3): .551*			*(5)=(6): .227*		*(4)=(7): .750*	*(8)=(9): .831*	
International political knowledge standardized score (2013)									
Treatment effect	0.080	0.016	0.119	0.106	0.031	0.139	0.060	0.004	0.103
standard error	(0.048)*	(0.062)	(0.062)*	(0.076)	(0.097)	(0.096)	(0.063)	(0.081)	(0.080)
Comparison mean	0.000	-0.402	0.419	0.057	-0.317	0.458	-0.039	-0.461	0.393
p-value on equality of effect	*(5)=(6)=(8)=(9): .680*	*(2)=(3): .239*			*(5)=(6): .429*		*(4)=(7): .641*	*(8)=(9): .385*	
Knows how to use the internet (2015)									
Treatment effect	0.073	0.099	0.040	0.092	0.135	0.033	0.061	0.074	0.046
standard error	(0.023)***	(0.031)***	(0.031)	(0.037)**	(0.049)***	(0.049)	(0.030)**	(0.040)*	(0.040)
Comparison mean	0.592	0.417	0.775	0.599	0.451	0.760	0.588	0.392	0.785
p-value on equality of effect	*(5)=(6)=(8)=(9): .434*	*(2)=(3): .180*			*(5)=(6): .137*		*(4)=(7): .523*	*(8)=(9): .621*	
Knows how to use the internet (2016)									
Treatment effect	0.049	0.066	0.020	0.013	0.040	-0.031	0.074	0.085	0.056
standard error	(0.023)**	(0.031)**	(0.030)	(0.036)	(0.048)	(0.048)	(0.030)**	(0.040)**	(0.039)
Comparison mean	0.639	0.475	0.811	0.665	0.519	0.823	0.622	0.444	0.803
p-value on equality of effect	*(5)=(6)=(8)=(9): .309*	*(2)=(3): .286*			*(5)=(6): .295*		*(4)=(7): .193*	*(8)=(9): .598*	
Observations	2049	1028	1021	828	418	410	1221	610	611

Notes: Year of survey in parentheses. Col. 1 shows results for the full sample, Col. 2 for females, Col. 3 for males, Col. 4 for academic major admits, Col. 5 for female academic major admits, Col. 6 for male academic major admits, Col. 7 for vocational major admits, Col. 8 for female vocational majors and Col. 9 for male vocational major admits. The estimated treatment effects are in the first cell row; standard errors are in the second cell row in parentheses, with ***, **, * indicating significance at 1, 5 and 10%; comparison group means are in the third cell row; the fourth cell row reports p-values of tests of hypotheses of equality of treatment effects between the columns specified in parentheses; all regressions control for region fixed effects, JHS finishing exam score (BECE) and missing JHS finishing exam scores.

Table 4: Tertiary Education Outcomes

	Combined			Academic Major Admits			Vocational Major Admits		
	All	Female	Male	All	Female	Male	All	Female	Male
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Ever enrolled in tertiary education (2016)									
Treatment effect	0.030	0.049	0.011	0.053	0.093	0.013	0.015	0.019	0.009
Standard error	(0.015)**	(0.021)**	(0.021)	(0.023)**	(0.033)***	(0.033)	(0.019)	(0.027)	(0.027)
Comparison mean	0.091	0.075	0.107	0.110	0.095	0.126	0.077	0.060	0.095
p-value on equality of effect	*(5)=(6)=(8)=(9): .191*	*(2)=(3): .196*			*(5)=(6): .084**		*(4)=(7): .194*	*(8)=(9): .787*	
Currently enrolled in tertiary program (2016)									
Treatment effect	0.028	0.046	0.010	0.053	0.075	0.030	0.011	0.027	-0.004
Standard error	(0.014)**	(0.020)**	(0.020)	(0.022)**	(0.031)**	(0.031)	(0.018)	(0.026)	(0.025)
Comparison mean	0.080	0.062	0.098	0.094	0.081	0.108	0.070	0.048	0.092
p-value on equality of effect	*(5)=(6)=(8)=(9): .267*	*(2)=(3): .191*			*(5)=(6): .301*		*(4)=(7): .145*	*(8)=(9): .391*	
University (2016)									
Treatment effect	0.020	0.036	0.003	0.026	0.048	0.003	0.016	0.029	0.002
Standard error	(0.009)**	(0.013)***	(0.013)	(0.014)*	(0.020)**	(0.020)	(0.012)	(0.017)*	(0.017)
Comparison mean	0.028	0.013	0.043	0.033	0.018	0.050	0.024	0.010	0.038
p-value on equality of effect	*(5)=(6)=(8)=(9): .264*	*(2)=(3): .064**			*(5)=(6): .115*		*(4)=(7): .596*	*(8)=(9): .266*	
Nurses training (2016)									
Treatment effect	0.006	0.004	0.008	0.007	0.020	-0.004	0.004	-0.007	0.015
Standard error	(0.006)	(0.009)	(0.009)	(0.010)	(0.014)	(0.014)	(0.008)	(0.011)	(0.011)
Comparison mean	0.015	0.022	0.008	0.022	0.032	0.012	0.010	0.015	0.005
p-value on equality of effect	*(5)=(6)=(8)=(9): .310*	*(2)=(3): .759*			*(5)=(6): .217*		*(4)=(7): .814*	*(8)=(9): .160*	
Teachers training (2016)									
Treatment effect	0.007	0.002	0.011	0.022	0.007	0.035	-0.004	-0.001	-0.006
Standard error	(0.008)	(0.012)	(0.012)	(0.013)	(0.019)	(0.019)*	(0.011)	(0.015)	(0.015)
Comparison mean	0.027	0.023	0.031	0.029	0.032	0.027	0.025	0.018	0.033
p-value on equality of effect	*(5)=(6)=(8)=(9): .346*	*(2)=(3): .613*			*(5)=(6): .290*		*(4)=(7): .143*	*(8)=(9): .822*	
Years spent attending tertiary education (2016)									
Treatment effect	0.075	0.095	0.054	0.095	0.160	0.029	0.062	0.052	0.071
Standard error	(0.028)***	(0.040)**	(0.040)	(0.045)**	(0.063)**	(0.063)	(0.037)*	(0.052)	(0.052)
Comparison mean	0.144	0.119	0.171	0.188	0.145	0.235	0.114	0.100	0.128
p-value on equality of effect	*(5)=(6)=(8)=(9): .471*	*(2)=(3): .474*			*(5)=(6): .143*		*(4)=(7): .563*	*(8)=(9): .800*	
Total years of education to date (2016)									
Treatment effect	1.250	1.286	1.196	1.376	1.433	1.298	1.164	1.189	1.126
Standard error	(0.095)***	(0.134)***	(0.133)***	(0.150)***	(0.211)***	(0.210)***	(0.124)***	(0.174)***	(0.173)***
Comparison mean	11.140	10.845	11.450	11.230	11.025	11.454	11.078	10.717	11.448
p-value on equality of effect	*(5)=(6)=(8)=(9): .698*	*(2)=(3): .633*			*(5)=(6): .651*		*(4)=(7): .276*	*(8)=(9): .797*	
Plans to continue to tertiary (2013)									
Treatment effect	0.249	0.274	0.220	0.264	0.275	0.249	0.237	0.274	0.199
Standard error	(0.024)***	(0.034)***	(0.034)***	(0.037)***	(0.053)***	(0.053)***	(0.031)***	(0.044)***	(0.044)***
Comparison mean	0.430	0.363	0.500	0.448	0.394	0.506	0.418	0.341	0.496
p-value on equality of effect	*(5)=(6)=(8)=(9): .611*	*(2)=(3): .257*			*(5)=(6): .733*		*(4)=(7): .579*	*(8)=(9): .233*	
Sat for WASSCE exam (2015)									
Treatment effect	0.276	0.284	0.267	0.297	0.284	0.308	0.262	0.284	0.239
Standard error	(0.024)***	(0.033)***	(0.033)***	(0.037)***	(0.052)***	(0.052)***	(0.031)***	(0.043)***	(0.043)***
Comparison mean	0.426	0.373	0.482	0.445	0.420	0.473	0.413	0.340	0.487
p-value on equality of effect	*(5)=(6)=(8)=(9): .760*	*(2)=(3): .715*			*(5)=(6): .747*		*(4)=(7): .460*	*(8)=(9): .458*	
Plans to apply to tertiary (2015)									
Treatment effect	0.164	0.181	0.146	0.163	0.145	0.179	0.165	0.206	0.123
Standard error	(0.024)***	(0.034)***	(0.034)***	(0.038)***	(0.054)***	(0.054)***	(0.032)***	(0.045)***	(0.044)***
Comparison mean	0.414	0.356	0.474	0.431	0.399	0.466	0.402	0.325	0.480
p-value on equality of effect	*(5)=(6)=(8)=(9): .587*	*(2)=(3): .469*			*(5)=(6): .651*		*(4)=(7): .983*	*(8)=(9): .189*	
Applied for tertiary education (2015)									
Treatment effect	0.081	0.112	0.049	0.094	0.132	0.056	0.072	0.098	0.046
standard error	(0.019)***	(0.027)***	(0.027)*	(0.030)***	(0.042)***	(0.042)	(0.025)***	(0.035)***	(0.035)
Comparison mean	0.160	0.135	0.186	0.173	0.164	0.183	0.151	0.114	0.188
p-value on equality of effect	*(5)=(6)=(8)=(9): .373*	*(2)=(3): .100*			*(5)=(6): .196*		*(4)=(7): .568*	*(8)=(9): .290*	
if applied: number of programs applied to (2015)									
Treatment effect	-0.056	0.025	-0.089	-0.045	0.107	-0.153	-0.065	-0.059	-0.054
standard error	(0.111)	(0.163)	(0.152)	(0.168)	(0.233)	(0.241)	(0.148)	(0.227)	(0.196)
Comparison mean	1.653	1.495	1.772	1.674	1.447	1.896	1.636	1.543	1.693
p-value on equality of effect	*(5)=(6)=(8)=(9): .889*	*(2)=(3): .609*			*(5)=(6): .438*		*(4)=(7): .926*	*(8)=(9): .985*	
Admitted to a tertiary program (2015)									
Treatment effect	0.032	0.055	0.009	0.026	0.060	-0.009	0.036	0.053	0.020
standard error	(0.014)**	(0.020)***	(0.020)	(0.023)	(0.032)*	(0.032)	(0.019)*	(0.026)**	(0.026)
Comparison mean	0.081	0.060	0.103	0.093	0.070	0.118	0.072	0.052	0.092
p-value on equality of effect	*(5)=(6)=(8)=(9): .360*	*(2)=(3): .101*			*(5)=(6): .130*		*(4)=(7): .730*	*(8)=(9): .374*	
Observations	1998	1009	989	812	412	400	1186	597	589

Notes: Year of survey in parentheses. See Table 3 notes for description of columns and rows; all regressions control for region fixed effects, JHS finishing exam score (BECE) (BECE) and missing JHS finishing exam scores; standard errors in parentheses, with ***, **, * indicating significance at 1, 5 and 10%.

Table 5: Marriage, Reproductive Health and Health Behaviors

	Combined			Academic Major Admits			Vocational Major Admits		
	All	Female	Male	All	Female	Male	All	Female	Male
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Ever lived with partner(2016)									
Treatment effect	-0.063	-0.091	-0.027	-0.060	-0.093	-0.015	-0.065	-0.091	-0.036
Standard error	(0.020)***	(0.028)***	(0.028)	(0.032)*	(0.044)**	(0.044)	(0.026)**	(0.036)**	(0.036)
Comparison mean	0.241	0.344	0.134	0.227	0.309	0.137	0.251	0.369	0.132
p-value on equality of effect	*(5)=(6)=(8)=(9): .426*	*(2)=(3): .106*			*(5)=(6): .210*		*(4)=(7): .891*	*(8)=(9): .281*	
Ever pregnant/had a pregnant partner (2016)									
Treatment effect	-0.071	-0.107	-0.023	-0.077	-0.114	-0.024	-0.067	-0.103	-0.025
Standard error	(0.024)***	(0.032)***	(0.031)	(0.038)**	(0.050)**	(0.049)	(0.031)**	(0.041)**	(0.041)
Comparison mean	0.403	0.582	0.213	0.396	0.537	0.242	0.407	0.614	0.194
p-value on equality of effect	*(5)=(6)=(8)=(9): .317*	*(2)=(3): .061**			*(5)=(6): .197*		*(4)=(7): .839*	*(8)=(9): .173*	
Number of children ever had (2016)									
Treatment effect	-0.130	-0.217	-0.030	-0.131	-0.186	-0.054	-0.129	-0.239	-0.014
Standard error	(0.040)***	(0.054)***	(0.054)	(0.064)**	(0.085)**	(0.085)	(0.052)**	(0.070)***	(0.069)
Comparison mean	0.519	0.814	0.212	0.504	0.738	0.249	0.530	0.868	0.188
p-value on equality of effect	*(5)=(6)=(8)=(9): .092**	*(2)=(3): .014***			*(5)=(6): .271*		*(4)=(7): .988*	*(8)=(9): .022***	
Had unwanted first pregnancy (full sample) (2016)									
Treatment effect	-0.071	-0.115	-0.019	-0.058	-0.097	-0.009	-0.080	-0.127	-0.027
Standard error	(0.024)***	(0.032)***	(0.031)	(0.038)	(0.050)**	(0.049)	(0.031)**	(0.041)***	(0.040)
Comparison mean	0.375	0.566	0.181	0.373	0.526	0.209	0.376	0.594	0.163
p-value on equality of effect	*(5)=(6)=(8)=(9): .183*	*(2)=(3): .032***			*(5)=(6): .205*		*(4)=(7): .656*	*(8)=(9): .083**	
Desired fertility: # of children by age 50 (2013)									
Treatment effect	-0.041	-0.078	-0.005	-0.146	-0.210	-0.086	0.031	0.014	0.049
Standard error	(0.052)	(0.073)	(0.073)	(0.081)*	(0.115)*	(0.114)	(0.067)	(0.096)	(0.095)
Comparison mean	3.629	3.639	3.619	3.651	3.644	3.658	3.615	3.636	3.594
p-value on equality of effect	*(5)=(6)=(8)=(9): .316*	*(2)=(3): .482*			*(5)=(6): .443*		*(4)=(7): .091**	*(8)=(9): .792*	
Index of risky sexual behavior(safe-->risky)(2013)									
Treatment effect	-0.052	-0.014	-0.084	-0.045	-0.025	-0.056	-0.058	-0.007	-0.105
Standard error	(0.030)*	(0.041)	(0.041)**	(0.046)	(0.064)	(0.064)	(0.039)	(0.054)	(0.053)*
Comparison mean	0.000	0.096	-0.099	0.013	0.110	-0.092	-0.008	0.086	-0.104
p-value on equality of effect	*(5)=(6)=(8)=(9): .601*	*(2)=(3): .229*			*(5)=(6): .732*		*(4)=(7): .835*	*(8)=(9): .195*	
Index of STI risk exposure (2013)									
Treatment effect	-0.074	-0.062	-0.080	-0.109	-0.116	-0.092	-0.051	-0.025	-0.075
Standard error	(0.029)**	(0.041)	(0.041)**	(0.046)**	(0.064)*	(0.063)	(0.038)	(0.053)	(0.053)
Comparison mean	-0.000	0.092	-0.096	0.037	0.132	-0.065	-0.025	0.064	-0.116
p-value on equality of effect	*(5)=(6)=(8)=(9): .712*	*(2)=(3): .748*			*(5)=(6): .783*		*(4)=(7): .333*	*(8)=(9): .506*	
Preventative health behavior (3 questions) (2013)									
Treatment effect	0.116	0.124	0.114	0.171	0.183	0.170	0.078	0.082	0.076
Standard error	(0.038)***	(0.054)**	(0.054)**	(0.060)***	(0.084)**	(0.084)**	(0.050)	(0.070)	(0.070)
Comparison mean	1.624	1.691	1.555	1.633	1.721	1.538	1.618	1.669	1.566
p-value on equality of effect	*(5)=(6)=(8)=(9): .658*	*(2)=(3): .895*			*(5)=(6): .919*		*(4)=(7): .235*	*(8)=(9): .947*	
Observations	2032	1023	1009	821	417	404	1211	606	605

Notes: Year of survey in parentheses. See Table 3 notes for description of columns and rows; all regressions control for region fixed effects, JHS finishing exam score (BECE) and a dummy for missing JHS finishing exam score; standard errors in parentheses, with ***, **, * indicating significance at 1, 5 and 10%. Refer to Table A1 for components of index of risky sexual behavior and index of STI exposure.

Table 6: Labor Market Outcomes

	Combined			Academic Major Admits			Vocational Major Admits		
	All	Female	Male	All	Female	Male	All	Female	Male
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Panel A. Earnings									
Inv. hyperbolic sine earnings (2016)									
Treatment effect	0.308	0.383	0.177	0.019	0.213	-0.269	0.505	0.498	0.482
Standard error	(0.145)**	(0.198)*	(0.197)	(0.227)	(0.311)	(0.310)	(0.187)***	(0.257)*	(0.255)*
Comparison mean	3.214	2.413	4.054	3.143	2.313	4.047	3.263	2.484	4.059
p-value on equality of effects	*(5)=(6)=(8)=(9): .211*	*(2)=(3): .460*			*(5)=(6): .273*		*(4)=(7): .099**	*(8)=(9): .965*	
Log earnings last month if positive (2016)									
Treatment effect	-0.019	0.049	-0.064	-0.059	0.109	-0.177	0.006	0.012	0.005
Standard error	(0.060)	(0.093)	(0.077)	(0.099)	(0.151)	(0.125)	(0.077)	(0.117)	(0.097)
Comparison mean	5.066	4.792	5.251	5.053	4.761	5.252	5.074	4.812	5.250
p-value on equality of effects	*(5)=(6)=(8)=(9): .482*	*(2)=(3): .348*			*(5)=(6): .144*		*(4)=(7): .603*	*(8)=(9): .964*	
Positive earnings (2016)									
Treatment effect	0.055	0.063	0.039	0.007	0.028	-0.028	0.088	0.087	0.085
Standard error	(0.025)**	(0.034)*	(0.034)	(0.039)	(0.053)	(0.053)	(0.032)***	(0.044)**	(0.044)*
Comparison mean	0.556	0.441	0.679	0.545	0.424	0.678	0.564	0.452	0.679
p-value on equality of effects	*(5)=(6)=(8)=(9): .299*	*(2)=(3): .610*			*(5)=(6): .450*		*(4)=(7): .105*	*(8)=(9): .980*	
Total earnings last month (GHX) (2016)									
Treatment effect	7.656	5.132	6.216	-19.199	-6.732	-38.617	25.921	13.097	36.492
Standard error	(10.993)	(15.176)	(15.068)	(17.283)	(23.815)	(23.722)	(14.244)*	(19.678)	(19.501)*
Comparison mean	134.854	82.022	190.202	136.261	79.106	198.471	133.887	84.090	184.703
p-value on equality of effects	*(5)=(6)=(8)=(9): .094**	*(2)=(3): .959*			*(5)=(6): .342*		*(4)=(7): .044***	*(8)=(9): .398*	
Panel B. Work Hours									
Total hours worked last month (2016)									
Treatment effect	9.970	17.497	1.567	2.762	15.558	-11.482	14.916	18.706	10.706
Standard error	(5.383)*	(7.560)**	(7.555)	(8.452)	(11.850)	(11.883)	(6.968)**	(9.796)*	(9.772)
Comparison mean	82.658	66.354	99.899	76.366	60.569	93.694	87.000	70.467	104.047
p-value on equality of effects	*(5)=(6)=(8)=(9): .233*	*(2)=(3): .136*			*(5)=(6): .107*		*(4)=(7): .267*	*(8)=(9): .563*	
Worked over 10 hours in the past month (2016)									
Treatment effect	0.060	0.089	0.024	-0.023	0.038	-0.097	0.116	0.122	0.107
Standard error	(0.025)**	(0.034)***	(0.034)	(0.039)	(0.053)	(0.054)*	(0.032)***	(0.044)***	(0.044)**
Comparison mean	0.538	0.424	0.659	0.537	0.415	0.671	0.538	0.430	0.651
p-value on equality of effects	*(5)=(6)=(8)=(9): .008***	*(2)=(3): .184*			*(5)=(6): .074**		*(4)=(7): .005****	*(8)=(9): .805*	
Total hours worked last month if positive (2016)									
Treatment effect	2.692	13.000	-4.778	6.747	26.621	-7.396	-0.642	4.150	-4.263
Standard error	(6.810)	(10.560)	(8.910)	(11.142)	(17.266)	(14.571)	(8.595)	(13.325)	(11.253)
Comparison mean	147.013	148.272	146.143	136.801	138.234	135.803	153.959	155.149	153.141
p-value on equality of effects	*(5)=(6)=(8)=(9): .426*	*(2)=(3): .198*			*(5)=(6): .132*		*(4)=(7): .599*	*(8)=(9): .629*	
Earnings per hour if worked over 10 hours (2016)									
Treatment effect	-0.522	-0.494	-0.499	-0.724	-0.507	-0.783	-0.364	-0.492	-0.246
Standard error	(0.233)**	(0.356)	(0.302)*	(0.385)*	(0.581)	(0.502)	(0.293)	(0.449)	(0.378)
Comparison mean	2.464	1.762	2.941	2.765	1.687	3.494	2.256	1.814	2.559
p-value on equality of effects	*(5)=(6)=(8)=(9): .862*	*(2)=(3): .990*			*(5)=(6): .718*		*(4)=(7): .457*	*(8)=(9): .675*	
Total hours helping family in past week (2016)									
Treatment effect	-3.492	-2.443	-3.544	-3.735	-1.201	-5.404	-3.314	-3.410	-2.550
Standard error	(2.008)*	(2.815)	(2.734)	(3.209)	(4.285)	(4.637)	(2.567)	(3.754)	(3.390)
Comparison mean	16.472	20.536	12.170	18.056	21.395	13.694	15.388	19.840	11.303
p-value on equality of effects	*(5)=(6)=(8)=(9): .924*	*(2)=(3): .778*			*(5)=(6): .505*		*(4)=(7): .918*	*(8)=(9): .864*	
Panel C. Occupation									
Enrolled in formal study/training (2016)									
Treatment effect	0.025	0.050	0.000	0.053	0.080	0.026	0.007	0.030	-0.017
Standard error	(0.015)*	(0.021)**	(0.021)	(0.023)**	(0.033)**	(0.032)	(0.019)	(0.027)	(0.027)
Comparison mean	0.091	0.072	0.111	0.105	0.092	0.119	0.081	0.058	0.105
p-value on equality of effects	*(5)=(6)=(8)=(9): .145*	*(2)=(3): .089**			*(5)=(6): .240*		*(4)=(7): .119*	*(8)=(9): .210*	
Positive earnings or in school (2016)									
Treatment effect	0.064	0.095	0.025	0.040	0.087	-0.020	0.080	0.101	0.055
standard error	(0.023)***	(0.032)***	(0.032)	(0.037)	(0.051)*	(0.051)	(0.030)***	(0.042)**	(0.042)
Comparison mean	0.627	0.504	0.756	0.632	0.505	0.769	0.624	0.504	0.747
p-value on equality of effects	*(5)=(6)=(8)=(9): .295*	*(2)=(3): .123*			*(5)=(6): .138*		*(4)=(7): .400*	*(8)=(9): .439*	
Wage worker (2016)									
Treatment effect	0.051	0.088	0.011	0.001	0.071	-0.074	0.085	0.100	0.069
standard error	(0.022)**	(0.031)***	(0.030)	(0.034)	(0.048)	(0.048)	(0.028)***	(0.040)**	(0.039)*
Comparison mean	0.241	0.179	0.305	0.244	0.180	0.313	0.239	0.178	0.300
p-value on equality of effects	*(5)=(6)=(8)=(9): .033***	*(2)=(3): .075**			*(5)=(6): .032***		*(4)=(7): .056**	*(8)=(9): .585*	
Day or seasonal laborer (2016)									
Treatment effect	0.017	0.008	0.020	-0.024	0.022	-0.081	0.045	-0.001	0.089
standard error	(0.017)	(0.023)	(0.023)	(0.026)	(0.036)	(0.036)**	(0.022)**	(0.030)	(0.030)***
Comparison mean	0.126	0.047	0.210	0.129	0.028	0.240	0.124	0.060	0.189
p-value on equality of effects	*(5)=(6)=(8)=(9): .003***	*(2)=(3): .713*			*(5)=(6): .043***		*(4)=(7): .045***	*(8)=(9): .031***	
Working for own or family business (2016)									
Treatment effect	-0.012	-0.019	-0.006	-0.032	-0.041	-0.028	0.001	-0.005	0.008
standard error	(0.023)	(0.032)	(0.032)	(0.036)	(0.050)	(0.050)	(0.029)	(0.042)	(0.041)
Comparison mean	0.306	0.286	0.326	0.292	0.254	0.333	0.315	0.309	0.321
p-value on equality of effects	*(5)=(6)=(8)=(9): .878*	*(2)=(3): .777*			*(5)=(6): .853*		*(4)=(7): .469*	*(8)=(9): .822*	

Table 6 continues on next page

Table 6: Labor Market Outcomes cont.

	Combined			Academic Major Admits			Vocational Major Admits		
	All	Female	Male	All	Female	Male	All	Female	Male
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Panel D. Job Search/ Reservation Wage									
Actively searching for a job (2016)									
Treatment effect	0.071	0.051	0.088	0.136	0.108	0.157	0.027	0.012	0.040
standard error	(0.022)***	(0.032)	(0.032)***	(0.035)***	(0.050)**	(0.050)***	(0.029)	(0.041)	(0.041)
Comparison mean	0.276	0.235	0.320	0.274	0.226	0.327	0.277	0.241	0.315
p-value on equality of effects	*(5)=(6)=(8)=(9): .105*	*(2)=(3): .415*			*(5)=(6): .491*		*(4)=(7): .017***	*(8)=(9): .630*	
If no earnings and no school: actively searching for a job (2016)									
Treatment effect	0.142	0.166	0.074	0.253	0.295	0.145	0.059	0.078	0.015
standard error	(0.041)***	(0.051)***	(0.069)	(0.063)***	(0.079)***	(0.102)	(0.054)	(0.066)	(0.093)
Comparison mean	0.322	0.257	0.459	0.305	0.243	0.450	0.333	0.268	0.465
p-value on equality of effects	*(5)=(6)=(8)=(9): .090**	*(2)=(3): .284*			*(5)=(6): .245*		*(4)=(7): .019***	*(8)=(9): .584*	
If earnings: actively searching for a job (2016)									
Treatment effect	0.057	-0.009	0.104	0.107	0.003	0.179	0.029	-0.016	0.061
standard error	(0.029)*	(0.045)	(0.038)***	(0.048)**	(0.074)	(0.062)***	(0.037)	(0.057)	(0.048)
Comparison mean	0.274	0.237	0.300	0.285	0.242	0.314	0.267	0.233	0.290
p-value on equality of effects	*(5)=(6)=(8)=(9): .109*	*(2)=(3): .055**			*(5)=(6): .068**		*(4)=(7): .194*	*(8)=(9): .301*	
Lowest daily wage willing to work for(GHX) (2013)									
Treatment effect	-0.606	0.770	-2.049	-0.520	0.290	-1.494	-0.637	1.118	-2.408
standard error	(0.578)	(0.814)	(0.806)**	(0.904)	(1.273)	(1.260)	(0.752)	(1.058)	(1.049)**
Comparison mean	9.949	8.012	11.959	9.291	7.163	11.550	10.396	8.599	12.230
p-value on equality of effects	*(5)=(6)=(8)=(9): .086**	*(2)=(3): .013***			*(5)=(6): .319*		*(4)=(7): .920*	*(8)=(9): .018***	
Willing to move for wage employment (2013)									
Treatment effect	0.009	0.004	0.013	0.003	-0.016	0.020	0.014	0.018	0.010
standard error	(0.016)	(0.023)	(0.023)	(0.026)	(0.036)	(0.036)	(0.021)	(0.030)	(0.030)
Comparison mean	0.870	0.854	0.888	0.857	0.846	0.869	0.879	0.859	0.900
p-value on equality of effects	*(5)=(6)=(8)=(9): .884*	*(2)=(3): .775*			*(5)=(6): .486*		*(4)=(7): .733*	*(8)=(9): .845*	
Willing to do labor intensive work (2013)									
Treatment effect	0.009	0.027	-0.014	0.006	0.067	-0.061	0.011	-0.001	0.020
standard error	(0.024)	(0.033)	(0.033)	(0.037)	(0.052)	(0.052)	(0.031)	(0.043)	(0.043)
Comparison mean	0.640	0.555	0.729	0.645	0.570	0.726	0.637	0.545	0.731
p-value on equality of effects	*(5)=(6)=(8)=(9): .357*	*(2)=(3): .377*			*(5)=(6): .078**		*(4)=(7): .919*	*(8)=(9): .734*	

Notes: Data from 2016 callback. See Table 3 notes for description of columns and rows; all regressions control for region fixed effects, JHS finishing exam score (BECE) and a dummy for missing JHS finishing exam score; standard errors in parentheses, with ***, **, * indicating significance at 1, 5 and 10%. 1984 observations in 2013 survey and 1996 observations in 2016 survey.

Table 7: Bounds on Labor Market effects for those not currently in Formal Education☒

	Combined			Academic Major Admits			Vocational Major Admits		
	All	Female	Male	All	Female	Male	All	Female	Male
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Panel A. Earnings									
Inv. hyperbolic sine earnings (2016)									
Lower Bound on Treatment E	0.351	0.460	0.133	0.089	0.337	-0.315	0.516	0.533	0.423
Standard error	(0.151)**	(0.205)**	(0.204)	(0.242)	(0.331)	(0.326)	(0.193)***	(0.262)**	(0.263)
p-value on equality of effects	*(5)=(6)=(8)=(9): .205*	*(2)=(3): .258*			*(3)=(4): .160*		*(4)=(7): .169*	*(8)=(9): .767*	
Upper Bound on Treatment E	0.477	0.746	0.180	0.370	0.802	-0.199	0.550	0.702	0.422
Standard error	(0.150)***	(0.203)***	(0.200)	(0.242)	(0.329)**	(0.321)	(0.191)***	(0.258)***	(0.257)
p-value on equality of effects	*(5)=(6)=(8)=(9): .102*	*(2)=(3): .047***			*(3)=(4): .029***		*(4)=(7): .559*	*(8)=(9): .442*	
Log earnings last month if positive (2016)									
Lower Bound on Treatment E	-0.028	0.044	-0.080	-0.107	0.079	-0.239	0.019	0.023	0.017
Standard error	(0.062)	(0.095)	(0.079)	(0.102)	(0.157)	(0.128)*	(0.078)	(0.120)	(0.100)
p-value on equality of effects	*(5)=(6)=(8)=(9): .313*	*(2)=(3): .315*			*(3)=(4): .116*		*(4)=(7): .328*	*(8)=(9): .967*	
Upper Bound on Treatment E	0.038	0.150	-0.042	0.023	0.266	-0.175	0.040	0.102	0.016
Standard error	(0.060)	(0.092)	(0.075)	(0.099)	(0.153)*	(0.124)	(0.075)	(0.116)	(0.096)
p-value on equality of effects	*(5)=(6)=(8)=(9): .138*	*(2)=(3): .106*			*(3)=(4): .025***		*(4)=(7): .890*	*(8)=(9): .566*	
Positive earnings (2016)									
Lower Bound on Treatment E	0.063	0.078	0.034	0.024	0.053	-0.027	0.088	0.092	0.074
Standard error	(0.026)**	(0.035)**	(0.035)	(0.041)	(0.056)	(0.056)	(0.033)***	(0.045)**	(0.045)*
p-value on equality of effects	*(5)=(6)=(8)=(9): .386*	*(2)=(3): .383*			*(3)=(4): .314*		*(4)=(7): .223*	*(8)=(9): .776*	
Upper Bound on Treatment E	0.076	0.110	0.035	0.049	0.105	-0.020	0.091	0.109	0.074
Standard error	(0.026)***	(0.035)***	(0.035)	(0.041)	(0.057)*	(0.056)	(0.033)***	(0.045)**	(0.045)*
p-value on equality of effects	*(5)=(6)=(8)=(9): .302*	*(2)=(3): .132*			*(3)=(4): .120*		*(4)=(7): .393*	*(8)=(9): .581*	
Total earnings last month (GHX) (2016)									
Lower Bound on Treatment E	8.183	7.164	1.636	-24.840	-6.567	-54.572	29.238	15.480	38.094
Standard error	(11.992)	(16.466)	(16.407)	(19.212)	(26.512)	(26.136)*	(15.345)*	(20.989)	(21.049)*
p-value on equality of effects	*(5)=(6)=(8)=(9): .044**(2)=(3): .812*				*(3)=(4): .197*		*(4)=(7): .028***	*(8)=(9): .446*	
Upper Bound on Treatment E	36.353	40.391	18.306	28.178	39.599	-18.474	38.949	37.234	37.850
Standard error	(9.572)***	(14.194)***	(14.036)	(15.955)*	(23.751)*	(23.181)	12.623)***	(18.619)**	(18.565)**
p-value on equality of effects	*(5)=(6)=(8)=(9): .189*	*(2)=(3): .268*			*(3)=(4): .080**		*(4)=(7): .596*	*(8)=(9): .981*	
Panel B. Work Hours									
Total hours worked last month (2016)									
Lower Bound on Treatment E	11.217	19.709	0.807	3.936	19.692	-14.051	15.642	19.413	10.471
Standard error	(5.807)*	(8.122)**	(8.154)	(9.300)	(13.073)	(12.990)	(7.427)**	(10.354)*	(10.460)
p-value on equality of effects	*(5)=(6)=(8)=(9): .186*	*(2)=(3): .100*			*(3)=(4): .067**		*(4)=(7): .325*	*(8)=(9): .543*	
Upper Bound on Treatment E	22.297	40.030	2.391	23.893	46.226	-5.096	18.379	29.632	10.022
Standard error	(5.389)***	(7.590)***	(7.534)	(8.851)**	(12.377)***	(12.172)	(6.988)***	(9.701)***	(9.746)
p-value on equality of effects	*(5)=(6)=(8)=(9): .013**(2)=(3): .000****				*(3)=(4): .003****		*(4)=(7): .625*	*(8)=(9): .154*	
Worked any hours in past month (2016)									
Lower Bound on Treatment E	0.066	0.088	0.029	0.008	0.046	-0.051	0.102	0.114	0.080
Standard error	(0.025)***	(0.035)**	(0.035)	(0.041)	(0.056)	(0.056)	(0.033)***	(0.044)**	(0.045)*
p-value on equality of effects	*(5)=(6)=(8)=(9): .126*	*(2)=(3): .226*			*(3)=(4): .219*		*(4)=(7): .072**	*(8)=(9): .592*	
Upper Bound on Treatment E	0.076	0.119	0.029	0.032	0.099	-0.042	0.105	0.131	0.080
Standard error	(0.026)***	(0.035)***	(0.035)	(0.041)	(0.057)*	(0.056)	(0.033)***	(0.045)***	(0.045)*
p-value on equality of effects	*(5)=(6)=(8)=(9): .107*	*(2)=(3): .069**			*(3)=(4): .076**		*(4)=(7): .166*	*(8)=(9): .421*	
Total hours worked last month if positive (2016)									
Lower Bound on Treatment E	2.441	12.193	-4.573	4.598	25.436	-9.947	0.026	3.680	-2.731
Standard error	(7.014)	(10.869)	(9.189)	(11.526)	(17.932)	(15.034)	(8.831)	(13.641)	(11.594)
p-value on equality of effects	*(5)=(6)=(8)=(9): .472*	*(2)=(3): .239*			*(3)=(4): .130*		*(4)=(7): .753*	*(8)=(9): .720*	
Upper Bound on Treatment E	9.617	27.297	-4.204	17.188	51.725	0.075	2.171	12.483	-3.341
Standard error	(6.728)	(10.632)**	(8.880)	(11.224)	(17.513)***	(14.481)	(8.530)	(13.132)	(11.088)
p-value on equality of effects	*(5)=(6)=(8)=(9): .055**(2)=(3): .023***				*(3)=(4): .023***		*(4)=(7): .287*	*(8)=(9): .357*	
Earnings per hour if worked over 10 hours (2016)									
Lower Bound on Treatment E	-0.514	-0.487	-0.503	-0.795	-0.535	-0.898	-0.303	-0.466	-0.169
Standard error	(0.238)**	(0.363)	(0.309)	(0.395)**	(0.597)	(0.514)*	(0.298)	(0.455)	(0.385)
p-value on equality of effects	*(5)=(6)=(8)=(9): .726*	*(2)=(3): .973*			*(3)=(4): .644*		*(4)=(7): .320*	*(8)=(9): .618*	
Upper Bound on Treatment E	-0.058	-0.052	-0.319	0.188	-0.022	0.123	-0.254	-0.086	-0.191
Standard error	(0.132)	(0.258)	(0.217)	(0.228)	(0.354)	(0.301)	(0.170)	(0.267)	(0.224)
p-value on equality of effects	*(5)=(6)=(8)=(9): .867*	*(2)=(3): .429*			*(3)=(4): .754*		*(4)=(7): .120*	*(8)=(9): .761*	
Total hours helping family in past week (2016)									
Lower Bound on Treatment E	-3.149	-2.344	-2.581	-2.073	0.074	-2.677	-3.483	-3.623	-2.443
Standard error	(2.175)	(3.064)	(2.942)	(3.652)	(4.915)	(5.193)	(2.714)	(3.955)	(3.588)
p-value on equality of effects	*(5)=(6)=(8)=(9): .950*	*(2)=(3): .955*			*(3)=(4): .700*		*(4)=(7): .756*	*(8)=(9): .825*	
Upper Bound on Treatment E	-1.047	1.769	-1.617	3.105	6.631	0.126	-2.568	-0.849	-2.468
Standard error	(1.796)	(2.475)	(2.357)	(2.960)	(3.943)*	(4.124)	(2.184)	(3.155)	(2.842)
p-value on equality of effects	*(5)=(6)=(8)=(9): .303*	*(2)=(3): .321*			*(3)=(4): .253*		*(4)=(7): .123*	*(8)=(9): .703*	
Panel C. Occupation									
Wage worker (2016)									
Lower Bound on Treatment E	0.057	0.093	0.013	0.008	0.081	-0.073	0.088	0.102	0.068
Standard error	(0.023)**	(0.033)***	(0.033)	(0.038)	(0.053)	(0.053)	(0.030)***	(0.042)**	(0.042)
p-value on equality of effects	*(5)=(6)=(8)=(9): .058** (2)=(3): .083**				*(3)=(4): .040***		*(4)=(7): .098**	*(8)=(9): .565*	
Upper Bound on Treatment E	0.078	0.143	0.014	0.055	0.157	-0.051	0.094	0.124	0.067
Standard error	(0.023)***	(0.032)***	(0.032)	(0.037)	(0.052)***	(0.051)	(0.029)***	(0.041)***	(0.041)
p-value on equality of effects	*(5)=(6)=(8)=(9): .017**(2)=(3): .004****				*(3)=(4): .004****		*(4)=(7): .401*	*(8)=(9): .327*	

Table 7 cont. on next page

Table 7: Bounds on Labor Market effects for those not currently in Formal Education cont.☒

	Combined			Academic Major Admits			Vocational Major Admits		
	All	Female	Male	All	Female	Male	All	Female	Male
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Day or seasonal laborer (2016)									
Lower Bound on Treatment E	0.024	0.013	0.023	-0.019	0.030	-0.087	0.051	0.002	0.094
Standard error	(0.019)	(0.025)	(0.025)	(0.030)	(0.041)	(0.040)**	(0.024)**	(0.032)	(0.032)***
p-value on equality of effects	*(5)=(6)=(8)=(9): .005*** (2)=(3): .783*				*(3)=(4): .041***		*(4)=(7): .068**	*(8)=(9): .042***	
Upper Bound on Treatment E	0.050	0.000	0.025	0.038	0.000	-0.070	0.057	0.035	0.094
Standard error	(0.018)***	(0.000)	(0.029)	(0.028)	(0.000)	(0.042)*	(0.022)**	(0.033)	(0.033)***
p-value on equality of effects	*(5)=(6)=(8)=(9): .008*** (2)=(3): .425*				*(3)=(4): .112*		*(4)=(7): .596*	*(8)=(9): .202*	
Working for own or family business (2016)									
Lower Bound on Treatment E	-0.013	-0.015	-0.013	-0.029	-0.033	-0.032	-0.003	-0.006	-0.001
Standard error	(0.025)	(0.035)	(0.035)	(0.039)	(0.056)	(0.056)	(0.031)	(0.044)	(0.045)
p-value on equality of effects	*(5)=(6)=(8)=(9): .952 (2)=(3): .960*				*(3)=(4): .986*		*(4)=(7): .608*	*(8)=(9): .928*	
Upper Bound on Treatment E	0.006	0.026	-0.012	0.012	0.034	-0.016	0.002	0.015	-0.001
Standard error	(0.024)	(0.035)	(0.034)	(0.039)	(0.056)	(0.055)	(0.031)	(0.044)	(0.044)
p-value on equality of effects	*(5)=(6)=(8)=(9): .924 (2)=(3): .440*				*(3)=(4): .527*		*(4)=(7): .830*	*(8)=(9): .802*	
Panel D. Job Search/ Reservation Wage									
Actively searching for a job (2016)									
Lower Bound on Treatment E	0.085	0.072	0.091	0.164	0.149	0.169	0.035	0.025	0.040
Standard error	(0.024)***	(0.034)**	(0.034)***	(0.039)***	(0.055)***	(0.054)**	(0.031)	(0.044)	(0.044)
p-value on equality of effects	*(5)=(6)=(8)=(9): .085* (2)=(3): .693*				*(3)=(4): .795*		*(4)=(7): .009****	*(8)=(9): .800*	
Upper Bound on Treatment E	0.103	0.111	0.092	0.207	0.223	0.188	0.041	0.050	0.041
Standard error	(0.024)***	(0.034)***	(0.034)***	(0.039)***	(0.055)***	(0.054)**	(0.031)	(0.043)	(0.043)
p-value on equality of effects	*(5)=(6)=(8)=(9): .012** (2)=(3): .700*				*(3)=(4): .654*		*(4)=(7): .000****	*(8)=(9): .877*	
If no earnings and no school: actively searching for a job (2016)									
Lower Bound on Treatment E	0.142	0.166	0.074	0.253	0.295	0.145	0.059	0.078	0.015
Standard error	(0.041)***	(0.051)***	(0.069)	(0.063)***	(0.079)***	(0.102)	(0.054)	(0.066)	(0.093)
p-value on equality of effects	*(5)=(6)=(8)=(9): .090* (2)=(3): .284*				*(3)=(4): .245*		*(4)=(7): .019****	*(8)=(9): .584*	
Upper Bound on Treatment E	0.158	0.208	0.079	0.291	0.374	0.154	0.061	0.106	0.012
Standard error	(0.041)***	(0.050)***	(0.067)	(0.063)***	(0.078)***	(0.100)	(0.054)	(0.064)*	(0.091)
p-value on equality of effects	*(5)=(6)=(8)=(9): .012** (2)=(3): .117*				*(3)=(4): .098**		*(4)=(7): .004****	*(8)=(9): .398*	
If earnings: actively searching for a job (2016)									
Lower Bound on Treatment E	0.062	-0.001	0.105	0.111	0.014	0.175	0.035	-0.008	0.066
Standard error	(0.030)**	(0.047)	(0.039)***	(0.049)**	(0.077)	(0.064)**	(0.038)	(0.059)	(0.049)
p-value on equality of effects	*(5)=(6)=(8)=(9): .172 (2)=(3): .081**				*(3)=(4): .105*		*(4)=(7): .224*	*(8)=(9): .332*	
Upper Bound on Treatment E	0.082	0.033	0.107	0.152	0.090	0.193	0.040	0.018	0.066
Standard error	(0.030)***	(0.046)	(0.038)***	(0.049)***	(0.077)	(0.063)**	(0.037)	(0.058)	(0.048)
p-value on equality of effects	*(5)=(6)=(8)=(9): .201 (2)=(3): .216*				*(3)=(4): .276*		*(4)=(7): .071**	*(8)=(9): .529*	
Lowest daily wage willing to work for(GHX) (2013)									
Lower Bound on Treatment E	-1.030	0.412	-2.656	-1.061	0.389	-2.774	-1.005	0.406	-2.556
Standard error	(0.612)*	(0.856)	(0.854)***	(0.974)	(1.373)	(1.350)**	(0.786)	(1.096)	(1.103)**
p-value on equality of effects	*(5)=(6)=(8)=(9): .096* (2)=(3): .011**				*(3)=(4): .100*		*(4)=(7): .964*	*(8)=(9): .057**	
Upper Bound on Treatment E	0.863	2.316	-1.203	1.773	1.581	-0.513	0.331	2.754	-2.491
Standard error	(0.379)**	(0.606)***	(0.598)**	(0.690)**	(1.151)	(1.128)	(0.545)	(0.922)***	(0.914)***
p-value on equality of effects	*(5)=(6)=(8)=(9): 0.000*** (2)=(3): .000****				*(3)=(4): .193*		*(4)=(7): .101*	*(8)=(9): .000****	
Willing to move for wage employment (2013)									
Lower Bound on Treatment E	0.023	0.021	0.024	0.024	0.012	0.033	0.023	0.027	0.018
Standard error	(0.017)	(0.024)	(0.024)	(0.027)	(0.038)	(0.038)	(0.022)	(0.031)	(0.031)
p-value on equality of effects	*(5)=(6)=(8)=(9): .980 (2)=(3): .947*				*(3)=(4): .707*		*(4)=(7): .981*	*(8)=(9): .839*	
Upper Bound on Treatment E	0.027	0.029	0.023	0.032	0.024	0.035	0.024	0.030	0.018
Standard error	(0.017)	(0.024)	(0.024)	(0.027)	(0.039)	(0.039)	(0.022)	(0.031)	(0.031)
p-value on equality of effects	*(5)=(6)=(8)=(9): .983 (2)=(3): .884*				*(3)=(4): .822*		*(4)=(7): .789*	*(8)=(9): .785*	
Willing to do labor intensive work (2013)									
Lower Bound on Treatment E	0.012	0.020	-0.005	0.008	0.068	-0.063	0.014	-0.011	0.033
Standard error	(0.025)	(0.035)	(0.035)	(0.040)	(0.055)	(0.055)	(0.032)	(0.045)	(0.045)
p-value on equality of effects	*(5)=(6)=(8)=(9): .341 (2)=(3): .610*				*(3)=(4): .092**		*(4)=(7): .905*	*(8)=(9): .483*	
Upper Bound on Treatment E	0.020	0.044	-0.005	0.026	0.102	-0.055	0.017	0.003	0.033
Standard error	(0.025)	(0.035)	(0.035)	(0.040)	(0.056)*	(0.056)	(0.032)	(0.045)	(0.045)
p-value on equality of effects	*(5)=(6)=(8)=(9): .249 (2)=(3): .318*				*(3)=(4): .048**		*(4)=(7): .876*	*(8)=(9): .633*	
Observations	1802	922	880	714	364	350	1088	558	589

Notes: Year of survey in parentheses. See Table 3 for description of columns. Lower bound excludes those in formal study. Upper bound excludes those in formal study and the top percentiles of the distribution for a given outcome in the comparison group (the number of percentiles excluded is equal to the number of percentage points of the treatment effect on formal study/training for the sub-group if the treatment effect is positive). Cell rows 1 and 4 show the treatment effects for the lower bound and upper bound respectively; cell rows 2 and 5 show standard errors in parentheses with ***, **, * indicating significance at 1, 5 and 10%; cell rows 3 and 6 report p-values of tests of hypotheses of equality of treatment effects between the columns specified in parentheses for the lower bound and upper bound respectively; all regressions control for region fixed effects, JHS finishing exam score (BECE) and missing JHS finishing exam scores.

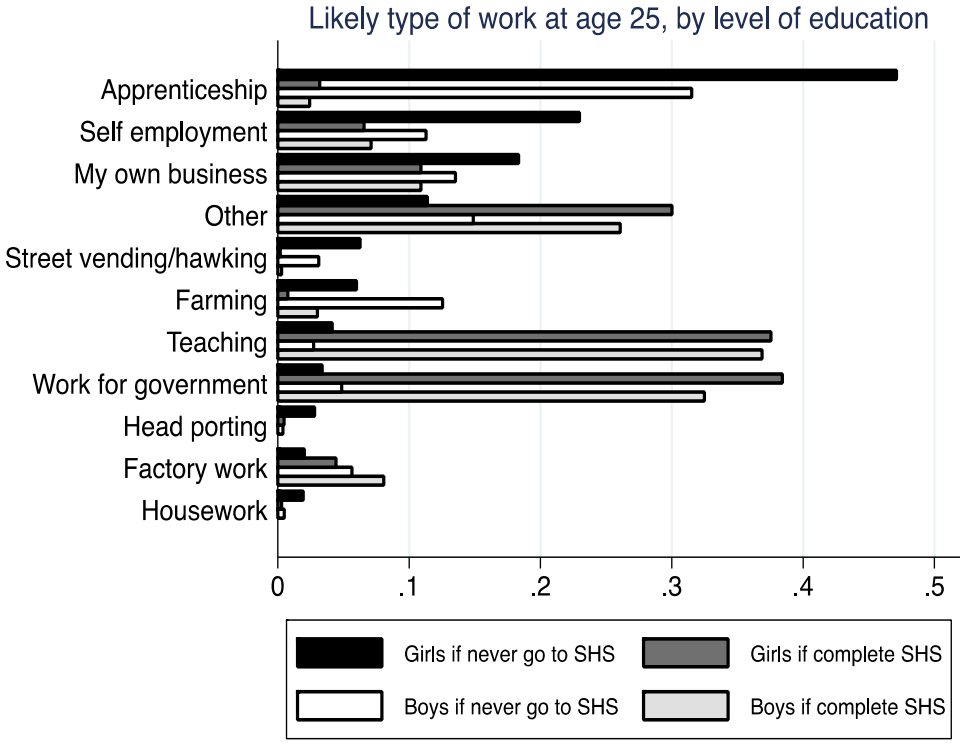
Table 8: Satisfaction and Mental Health

	Combined			Academic Major Admits			Vocational Major Admits		
	All	Female	Male	All	Female	Male	All	Female	Male
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Satisfaction Index(1-very unsatisfied-->5-very satisfied)(2013/2016)									
Treatment effect	0.013	0.104	-0.076	-0.047	-0.015	-0.077	0.055	0.188	-0.075
Standard error	(0.040)	(0.057)*	(0.056)	(0.062)	(0.088)	(0.088)	(0.052)	(0.074)**	(0.073)
Comparison mean	3.318	3.310	3.327	3.325	3.329	3.321	3.314	3.297	3.331
p-value on equality of effect	*(5)=(6)=(8)=(9): .042(2)=(3): .023**				*(5)=(6): .614*		*(4)=(7): .207*	*(8)=(9): .011**	
If employed: satisfaction with job(1-very unsatisfied-->5-very satisfied)(2016)									
Treatment effect	-0.279	-0.154	-0.377	-0.330	-0.146	-0.469	-0.247	-0.155	-0.322
Standard error	(0.081)***	(0.124)	(0.107)***	(0.133)**	(0.205)	(0.174)***	(0.102)**	(0.156)	(0.136)**
Comparison mean	3.670	3.735	3.623	3.688	3.766	3.633	3.658	3.715	3.617
p-value on equality of effect	*(5)=(6)=(8)=(9): .503(2)=(3): .172*				*(5)=(6): .229*		*(4)=(7): .621*	*(8)=(9): .419*	
Confident can get a better job(1-not sure possible --> 5-very confident)(2016)									
Treatment effect	0.059	0.078	0.045	0.088	0.142	0.049	0.040	0.041	0.040
Standard error	(0.034)*	(0.053)	(0.045)	(0.056)	(0.088)	(0.074)	(0.044)	(0.067)	(0.058)
Comparison mean	4.792	4.783	4.798	4.755	4.745	4.763	4.816	4.808	4.822
p-value on equality of effect	*(5)=(6)=(8)=(9): .778(2)=(3): .630*				*(5)=(6): .416*		*(4)=(7): .505*	*(8)=(9): .984*	
Mental health index(1-depressed-->5-positive)(average over 7 questions)(2013)									
Treatment effect	-0.001	-0.023	0.020	0.016	-0.002	0.031	-0.012	-0.038	0.013
Standard error	(0.029)	(0.041)	(0.041)	(0.045)	(0.064)	(0.064)	(0.038)	(0.054)	(0.053)
Comparison mean	3.981	3.959	4.003	3.963	3.948	3.979	3.993	3.967	4.020
p-value on equality of effect	*(5)=(6)=(8)=(9): .850(2)=(3): .459*				*(5)=(6): .719*		*(4)=(7): .640*	*(8)=(9): .499*	
Feasibility of changing your life (1-no --> 4-certainly) (2013)									
Treatment effect	0.016	0.039	-0.007	-0.055	-0.029	-0.080	0.067	0.087	0.046
Standard error	(0.032)	(0.046)	(0.045)	(0.050)	(0.071)	(0.071)	(0.042)	(0.059)	(0.059)
Comparison mean	3.421	3.399	3.444	3.434	3.444	3.423	3.412	3.367	3.458
p-value on equality of effect	*(5)=(6)=(8)=(9): .270(2)=(3): .473*				*(5)=(6): .612*		*(4)=(7): .062**	*(8)=(9): .626*	
Observations	1981	1001	980	807	408	399	1174	593	581

Notes: Year of survey in parentheses. See Table 3 notes for description of columns and cell rows; all regressions control for region fixed effects, JHS finishing exam score (BECE) and missing JHS finishing exam scores; standard errors in parentheses, with ***, **, * indicating significance at 1, 5 and 10%. Satisfaction Index is composed of scores from "Satisfaction with finances", "Satisfaction with life" and" Life as good as others".

Figure A1. Expectations

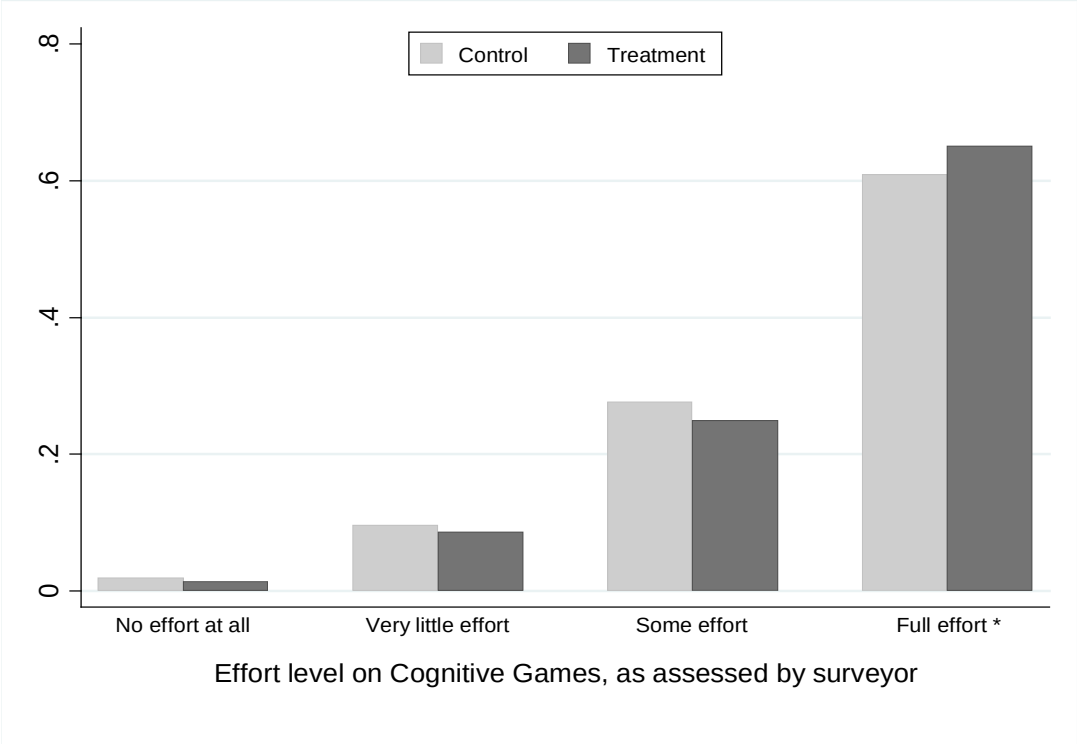
Participant's beliefs about education and work at 2008 baseline



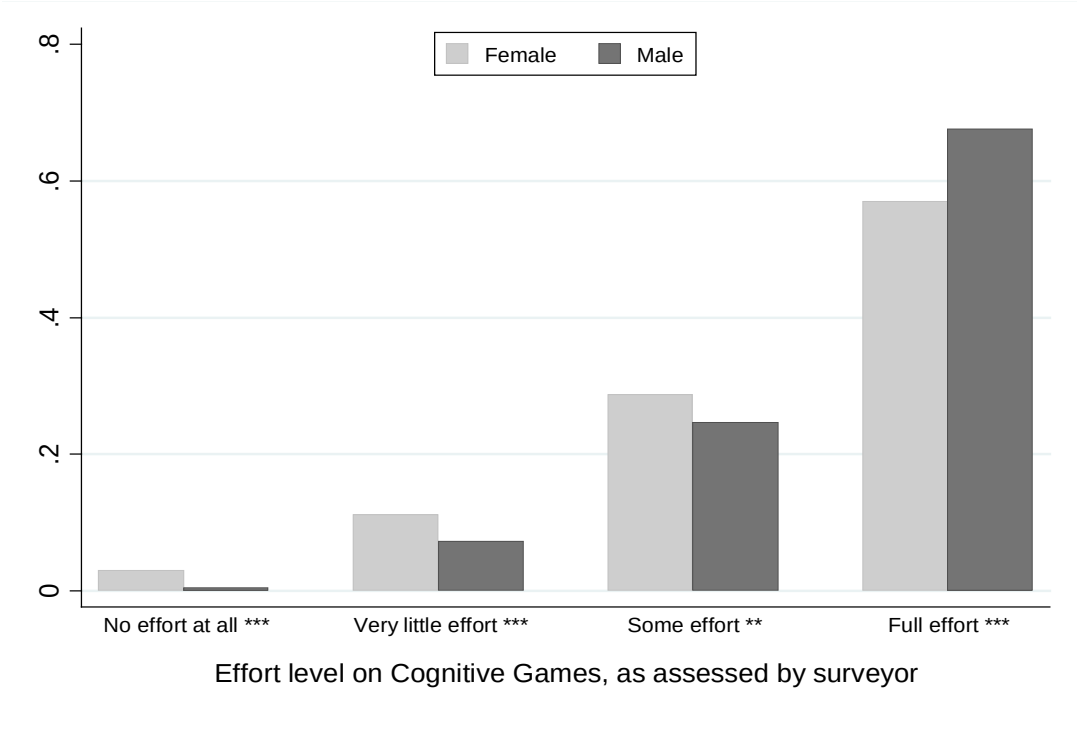
Note: Data from 2008 in-person baseline survey of participants

Figure A2. Effort Level on Cognitive Test "Games" during 2013 follow-up survey

Panel A. By Scholarhip (Treatment) Status

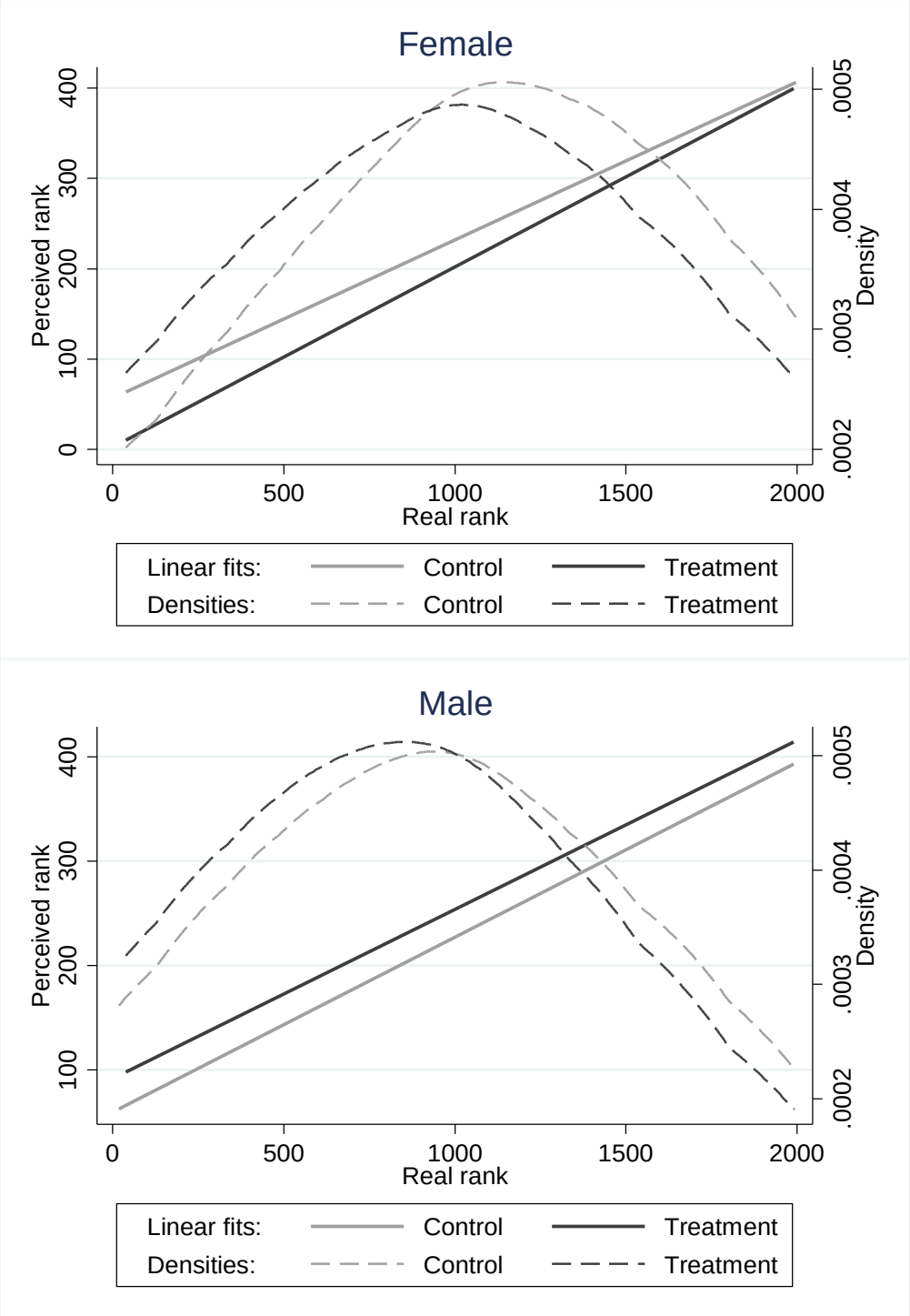


Panel B. By Gender



Note: Data from 2013 in-person follow-up survey.

Figure A3. Effects of Scholarship on accuracy of beliefs about relative performance



Notes: "Real rank" is the rank on the math and reading comprehension test administered during the 2013 follow-up survey. "Perceived rank" is the rank that the respondent reported when asked, immediately after the test: "We are administering this survey to around 2,000 youths your age (1,000 boys and 1,000 girls). All of those we are interviewing completed JHS around the same time as you, in 2007 or 2008. Overall, how do you think your performance on the games will compare to that of the others? Try to guess your rank between 1 and 2,000, with 1 being the person with the highest/top score and 2000 being the person with the lowest score."

Table A1: Survey Rates

	Combined			Academic Major Admits			Vocational Major Admits		
	All	Female	Male	All	Female	Male	All	Female	Male
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Surveyed in 2013									
Treatment effect	-0.011	-0.004	-0.017	0.008	0.032	-0.016	-0.023	-0.029	-0.018
Standard error	(0.009)	(0.013)	(0.013)	(0.015)	(0.021)	(0.020)	(0.012)**	(0.017)*	(0.017)
Comparison mean	0.963	0.967	0.959	0.964	0.956	0.974	0.962	0.976	0.949
p-value on equality of effe	*(5)=(6)=(8)=(9): .132*		*(2)=(3): .495*		*(5)=(6): .102*		*(4)=(7): .094**	*(8)=(9): .670*	
Surveyed in 2015									
Treatment effect	-0.008	0.004	-0.019	-0.004	0.017	-0.024	-0.011	-0.006	-0.015
Standard error	(0.008)	(0.011)	(0.011)*	(0.012)	(0.017)	(0.017)	(0.010)	(0.014)	(0.014)
Comparison mean	0.978	0.981	0.974	0.979	0.976	0.981	0.977	0.985	0.969
p-value on equality of effe	*(5)=(6)=(8)=(9): .332*		*(2)=(3): .144*		*(5)=(6): .084**		*(4)=(7): .661*	*(8)=(9): .622*	
Surveyed in 2016									
Treatment effect	0.006	0.006	0.006	-0.000	0.017	-0.017	0.010	-0.002	0.021
Standard error	(0.008)	(0.012)	(0.012)	(0.013)	(0.019)	(0.019)	(0.011)	(0.016)	(0.015)
Comparison mean	0.965	0.972	0.957	0.970	0.966	0.974	0.961	0.976	0.947
p-value on equality of effe	*(5)=(6)=(8)=(9): .379*		*(2)=(3): .990*		*(5)=(6): .200*		*(4)=(7): .556*	*(8)=(9): .298*	
Deceased as of 2015 survey									
Treatment effect	-0.001	0.000	-0.002	0.006	-0.003	0.015	-0.005	0.003	-0.012
Standard error	(0.004)	(0.006)	(0.006)	(0.007)	(0.010)	(0.010)	(0.006)	(0.008)	(0.008)
Comparison mean	0.009	0.003	0.016	0.005	0.003	0.007	0.012	0.002	0.022
p-value on equality of effe	*(5)=(6)=(8)=(9): .102*		*(2)=(3): .827*		*(5)=(6): .201*		*(4)=(7): .223*	*(8)=(9): .199*	
Deceased as of 2016 survey									
Treatment effect	-0.002	0.000	-0.005	0.006	-0.003	0.015	-0.008	0.002	-0.017
Standard error	(0.005)	(0.007)	(0.007)	(0.007)	(0.010)	(0.010)	(0.006)	(0.009)	(0.008)**
Comparison mean	0.011	0.003	0.019	0.005	0.003	0.007	0.015	0.002	0.027
p-value on equality of effe	*(5)=(6)=(8)=(9): .102*		*(2)=(3): .588*		*(5)=(6): .230*		*(4)=(7): .150*	*(8)=(9): .102*	
Observations	2064	1036	1028	834	423	411	1230	613	617

Notes: Year of survey in parentheses. See Table 2 notes for description of columns; standard errors in parentheses, with ***, **, * indicating significance at 1, 5 and 10%.

Table A2: Education of Other Children from Baseline Household

	Combined			Academic Major Admit Households			Vocational Major Admit Households		
	All	Female	Male	All	Female	Male	All	Female	Male
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Panel A. All children eating from same pot at baseline									
Years of formal education to date									
Treatment effect	-0.094	-0.296	0.101	-0.188	-0.404	0.034	-0.033	-0.224	0.144
Standard error	(0.103)	(0.149)**	(0.144)	(0.162)	(0.235)*	(0.223)	(0.135)	(0.193)	(0.188)
Comparison mean	7.898	7.999	7.793	7.850	8.031	7.653	7.934	7.975	7.892
p-value on equality of effect	*(5)=(6)=(8)=(9): .248*	*(2)=(3): .054**			*(5)=(6): .177*		*(4)=(7): .459*	*(8)=(9): .171*	
Currently enrolled in school									
Treatment effect	0.002	0.019	-0.011	0.026	0.076	-0.018	-0.014	-0.020	-0.007
Standard error	(0.016)	(0.023)	(0.022)	(0.025)	(0.036)**	(0.035)	(0.021)	(0.030)	(0.029)
Comparison mean	0.507	0.515	0.498	0.506	0.505	0.507	0.508	0.523	0.492
p-value on equality of effect	*(5)=(6)=(8)=(9): .163*	*(2)=(3): .340*			*(5)=(6): .061**		*(4)=(7): .219*	*(8)=(9): .760*	
Ever enrolled in SHS									
Treatment effect	-0.008	-0.033	0.018	-0.007	-0.022	0.012	-0.009	-0.041	0.021
Standard error	(0.015)	(0.021)	(0.021)	(0.023)	(0.034)	(0.032)	(0.019)	(0.028)	(0.027)
Comparison mean	0.315	0.334	0.296	0.309	0.340	0.276	0.320	0.329	0.310
p-value on equality of effect	*(5)=(6)=(8)=(9): .370*	*(2)=(3): .083**			*(5)=(6): .460*		*(4)=(7): .953*	*(8)=(9): .109*	
Education costs financed by sampled youth									
Treatment effect	15.489	18.093	12.468	13.946	23.192	4.368	16.530	14.547	18.164
Standard error	(4.715)***	(6.750)***	(6.585)*	(7.397)*	(10.671)**	(10.280)	(6.126)***	(8.740)*	(8.581)**
Comparison mean	35.286	29.898	40.973	34.050	24.526	44.414	36.187	33.913	38.534
p-value on equality of effect	*(5)=(6)=(8)=(9): .615*	*(2)=(3): .550*			*(5)=(6): .203*		*(4)=(7): .787*	*(8)=(9): .767*	
Panel B. Children younger than sampled youth									
Years of formal education to date									
Treatment effect	-0.184	-0.432	0.055	-0.246	-0.515	0.014	-0.142	-0.383	0.092
Standard error	(0.110)*	(0.158)***	(0.154)	(0.171)	(0.249)**	(0.236)	(0.144)	(0.205)*	(0.203)
Comparison mean	7.296	7.405	7.179	7.169	7.301	7.023	7.387	7.481	7.288
p-value on equality of effect	*(5)=(6)=(8)=(9): .152*	*(2)=(3): .027***			*(5)=(6): .123*		*(4)=(7): .644*	*(8)=(9): .098**	
Currently enrolled in school									
Treatment effect	0.014	0.040	-0.009	0.009	0.071	-0.045	0.017	0.019	0.016
Standard error	(0.018)	(0.025)	(0.025)	(0.027)	(0.040)*	(0.038)	(0.023)	(0.033)	(0.033)
Comparison mean	0.633	0.639	0.627	0.647	0.642	0.651	0.624	0.637	0.610
p-value on equality of effect	*(5)=(6)=(8)=(9): .212*	*(2)=(3): .164*			*(5)=(6): .034***		*(4)=(7): .822*	*(8)=(9): .956*	
Ever enrolled in SHS									
Treatment effect	-0.016	-0.051	0.019	-0.016	-0.056	0.026	-0.017	-0.048	0.014
Standard error	(0.016)	(0.023)**	(0.022)	(0.025)	(0.036)	(0.034)	(0.021)	(0.030)	(0.029)
Comparison mean	0.254	0.277	0.230	0.238	0.270	0.201	0.266	0.282	0.249
p-value on equality of effect	*(5)=(6)=(8)=(9): .177*	*(2)=(3): .029***			*(5)=(6): .100*		*(4)=(7): .979*	*(8)=(9): .137*	
Education costs financed by sampled youth									
Treatment effect	22.847	22.430	22.721	17.005	22.454	10.575	26.915	22.266	31.449
Standard error	(5.841)***	(8.323)***	(8.200)***	(9.123)*	(13.165)*	(12.687)	(7.615)***	(10.767)**	(10.754)***
Comparison mean	42.360	37.738	47.333	41.888	32.144	52.651	42.694	41.785	43.654
p-value on equality of effect	*(5)=(6)=(8)=(9): .664*	*(2)=(3): .980*			*(5)=(6): .515*		*(4)=(7): .404*	*(8)=(9): .545*	
Panel C. Children older than sampled youth									
Years of formal education to date									
Treatment effect	0.089	-0.053	0.233	0.166	0.068	0.316	0.048	-0.073	0.157
Standard error	(0.205)	(0.295)	(0.284)	(0.324)	(0.472)	(0.444)	(0.264)	(0.380)	(0.369)
Comparison mean	9.868	10.045	9.697	9.962	10.385	9.526	9.795	9.764	9.824
p-value on equality of effect	*(5)=(6)=(8)=(9): .925*	*(2)=(3): .484*			*(5)=(6): .701*		*(4)=(7): .778*	*(8)=(9): .664*	
Currently enrolled in school									
Treatment effect	-0.001	-0.008	0.005	0.052	0.079	0.026	-0.037	-0.067	-0.009
Standard error	(0.018)	(0.026)	(0.025)	(0.029)*	(0.042)*	(0.039)	(0.024)	(0.034)**	(0.033)
Comparison mean	0.081	0.078	0.083	0.063	0.056	0.070	0.095	0.097	0.093
p-value on equality of effect	*(5)=(6)=(8)=(9): .046***	*(2)=(3): .714*			*(5)=(6): .355*		*(4)=(7): .016***	*(8)=(9): .223*	
Ever enrolled in SHS									
Treatment effect	0.017	0.011	0.024	0.045	0.113	-0.007	0.000	-0.047	0.044
standard error	(0.033)	(0.048)	(0.046)	(0.052)	(0.076)	(0.071)	(0.043)	(0.062)	(0.060)
Comparison mean	0.516	0.529	0.504	0.533	0.564	0.500	0.504	0.500	0.507
p-value on equality of effect	*(5)=(6)=(8)=(9): .398*	*(2)=(3): .841*			*(5)=(6): .253*		*(4)=(7): .510*	*(8)=(9): .289*	
Education costs financed by sampled youth									
Treatment effect	-4.717	7.364	-16.569	3.092	25.360	-17.863	-9.983	-3.923	-16.087
standard error	(6.137)	(8.811)	(8.513)*	(9.699)	(14.014)*	(13.367)	(7.926)	(11.392)	(11.016)
Comparison mean	11.639	2.500	20.778	9.686	0.000	20.000	13.184	4.592	21.359
p-value on equality of effect	*(5)=(6)=(8)=(9): .084**	*(2)=(3): .050**			*(5)=(6): .025***		*(4)=(7): .296*	*(8)=(9): .443*	

Table A2 continues on next page

Table A2: Education of Other Children from Baseline Household cont.

	Combined			Academic Major Admit Households			Vocational Major Admit Households		
	All	Female	Male	All	Female	Male	All	Female	Male
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Panel D. Male children									
Years of formal education to date									
Treatment effect	-0.265	-0.455	-0.098	-0.338	-0.512	-0.167	-0.218	-0.413	-0.065
standard error	(0.149)*	(0.221)**	(0.202)	(0.233)	(0.343)	(0.319)	(0.194)	(0.289)	(0.262)
Comparison mean	8.069	8.164	7.972	8.047	8.205	7.888	8.085	8.134	8.035
p-value on equality of effect	*(5)=(6)=(8)=(9): .690*	*(2)=(3): .231*			*(5)=(6): .461*		*(4)=(7): .691*	*(8)=(9): .371*	
Currently enrolled in school									
Treatment effect	0.034	0.034	0.039	0.041	0.061	0.028	0.029	0.015	0.044
standard error	(0.022)	(0.033)	(0.030)	(0.035)	(0.051)	(0.048)	(0.029)	(0.043)	(0.039)
Comparison mean	0.493	0.517	0.469	0.481	0.513	0.450	0.502	0.520	0.484
p-value on equality of effect	*(5)=(6)=(8)=(9): .908*	*(2)=(3): .904*			*(5)=(6): .643*		*(4)=(7): .776*	*(8)=(9): .616*	
Ever enrolled in SHS									
Treatment effect	-0.017	-0.035	0.001	-0.002	-0.023	0.020	-0.027	-0.043	-0.013
standard error	(0.021)	(0.031)	(0.029)	(0.033)	(0.049)	(0.045)	(0.028)	(0.041)	(0.037)
Comparison mean	0.350	0.371	0.329	0.342	0.374	0.309	0.356	0.369	0.343
p-value on equality of effect	*(5)=(6)=(8)=(9): .781*	*(2)=(3): .399*			*(5)=(6): .526*		*(4)=(7): .553*	*(8)=(9): .584*	
Education costs financed by sampled youth									
Treatment effect	16.370	24.347	9.247	8.123	12.171	3.927	21.230	32.620	12.021
standard error	(6.505)**	(9.552)**	(8.907)	(10.253)	(14.854)	(14.189)	(8.419)**	(12.490)***	(11.440)
Comparison mean	37.250	33.959	40.593	29.382	22.813	36.106	42.961	42.101	43.830
p-value on equality of effect	*(5)=(6)=(8)=(9): .444*	*(2)=(3): .247*			*(5)=(6): .688*		*(4)=(7): .323*	*(8)=(9): .223*	
Panel E. Female children									
Years of formal education to date									
Treatment effect	0.098	-0.136	0.347	-0.039	-0.322	0.270	0.189	-0.024	0.425
standard error	(0.142)	(0.199)	(0.204)*	(0.222)	(0.319)	(0.310)	(0.186)	(0.255)	(0.271)
Comparison mean	7.712	7.828	7.585	7.635	7.855	7.379	7.767	7.807	7.726
p-value on equality of effect	*(5)=(6)=(8)=(9): .292*	*(2)=(3): .089**			*(5)=(6): .183*		*(4)=(7): .431*	*(8)=(9): .227*	
Currently enrolled in school									
Treatment effect	-0.034	0.005	-0.074	0.010	0.094	-0.073	-0.064	-0.052	-0.079
standard error	(0.023)	(0.032)	(0.033)**	(0.036)	(0.051)*	(0.050)	(0.030)**	(0.042)	(0.044)*
Comparison mean	0.522	0.514	0.532	0.533	0.497	0.574	0.515	0.526	0.502
p-value on equality of effect	*(5)=(6)=(8)=(9): .046** (2)=(3): .086**				*(5)=(6): .020***		*(4)=(7): .113*	*(8)=(9): .651*	
Ever enrolled in SHS									
Treatment effect	0.002	-0.030	0.036	-0.013	-0.023	0.006	0.011	-0.034	0.062
standard error	(0.021)	(0.029)	(0.030)	(0.032)	(0.046)	(0.045)	(0.027)	(0.037)	(0.040)
Comparison mean	0.278	0.295	0.258	0.274	0.306	0.237	0.280	0.287	0.273
p-value on equality of effect	*(5)=(6)=(8)=(9): .313*	*(2)=(3): .108*			*(5)=(6): .652*		*(4)=(7): .569*	*(8)=(9): .076**	
Education costs financed by sampled youth									
Treatment effect	13.876	12.220	15.163	20.020	35.067	3.734	10.055	-0.985	23.117
standard error	(6.851)**	(9.556)	(9.800)	(10.660)*	(15.305)**	(14.889)	(8.921)	(12.239)	(12.983)*
Comparison mean	33.201	25.705	41.455	39.039	26.249	53.896	28.928	25.288	32.782
p-value on equality of effect	*(5)=(6)=(8)=(9): .225*	*(2)=(3): .829*			*(5)=(6): .142*		*(4)=(7): .473*	*(8)=(9): .176*	
Observations	4613	2306	2307	1920	962	958	2693	1344	1349

Notes: Data from 2015 follow-up. See Table 3 notes for description of columns and rows; all regressions control for region fixed effects, JHS finishing exam score (BECE), a dummy for missing JHS finishing exam score, individual age and gender; standard errors in parentheses, with ***, **, * indicating significance at 1, 5 and 10%.

Table A3: Other Impacts of the Scholarship

	Combined			Academic Major Admits			Vocational Major Admits		
	All	Female	Male	All	Female	Male	All	Female	Male
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Panel A. Other Cognitive or Academic Outcomes									
Ever enrolled in TVI (2015)									
Treatment effect	-0.041	-0.020	-0.062	-0.026	-0.009	-0.044	-0.050	-0.027	-0.073
Standard error	(0.010)***	(0.014)	(0.014)***	(0.016)	(0.022)	(0.022)*	(0.013)***	(0.019)	(0.019)***
Comparison mean	0.063	0.046	0.080	0.046	0.031	0.061	0.075	0.057	0.092
p-value on equality of effect	*(5)=(6)=(8)=(9): .132*	*(2)=(3): .039***			*(5)=(6): .276*		*(4)=(7): .238*	*(8)=(9): .081**	
Memory for digit span (forward) (2013)									
Treatment effect	0.072	0.041	0.092	-0.133	-0.256	-0.038	0.211	0.248	0.172
Standard error	(0.124)	(0.176)	(0.175)	(0.194)	(0.274)	(0.273)	(0.162)	(0.229)	(0.228)
Comparison mean	7.544	7.381	7.714	7.748	7.511	8.004	7.405	7.291	7.522
p-value on equality of effect	*(5)=(6)=(8)=(9): .497*	*(2)=(3): .835*			*(5)=(6): .572*		*(4)=(7): .173*	*(8)=(9): .813*	
Memory for digit span (backward) (2013)									
Treatment effect	0.072	0.017	0.117	-0.006	-0.070	0.039	0.124	0.077	0.166
Standard error	(0.088)	(0.124)	(0.124)	(0.138)	(0.194)	(0.194)	(0.115)	(0.162)	(0.161)
Comparison mean	4.541	4.374	4.714	4.635	4.457	4.827	4.476	4.316	4.639
p-value on equality of effect	*(5)=(6)=(8)=(9): .825*	*(2)=(3): .572*			*(5)=(6): .691*		*(4)=(7): .465*	*(8)=(9): .695*	
Raven's progressive matrices (2013)									
Treatment effect	-0.021	-0.033	-0.035	-0.055	0.049	-0.198	-0.001	-0.092	0.076
Standard error	(0.126)	(0.177)	(0.176)	(0.197)	(0.276)	(0.275)	(0.165)	(0.231)	(0.229)
Comparison mean	6.954	6.558	7.368	7.046	6.620	7.504	6.891	6.514	7.277
p-value on equality of effect	*(5)=(6)=(8)=(9): .863*	*(2)=(3): .994*			*(5)=(6): .526*		*(4)=(7): .830*	*(8)=(9): .603*	
Panel B. Migration Outcomes									
Ever migrated since 2008 (2016)									
Treatment effect	-0.021	-0.010	-0.030	-0.020	-0.000	-0.041	-0.021	-0.017	-0.024
Standard error	(0.020)	(0.029)	(0.028)	(0.032)	(0.045)	(0.045)	(0.026)	(0.037)	(0.037)
Comparison mean	0.791	0.806	0.776	0.805	0.796	0.815	0.782	0.813	0.751
p-value on equality of effect	*(5)=(6)=(8)=(9): .933*	*(2)=(3): .623*			*(5)=(6): .519*		*(4)=(7): .986*	*(8)=(9): .892*	
Lives in Greater Accra (2016)									
Treatment effect	0.014	0.023	0.006	-0.008	0.009	-0.026	0.029	0.032	0.027
Standard error	(0.018)	(0.026)	(0.026)	(0.029)	(0.041)	(0.040)	(0.024)	(0.034)	(0.033)
Comparison mean	0.180	0.174	0.186	0.192	0.173	0.212	0.172	0.175	0.169
p-value on equality of effect	*(5)=(6)=(8)=(9): .700*	*(2)=(3): .642*			*(5)=(6): .542*		*(4)=(7): .311*	*(8)=(9): .915*	
Lives in a town or city (2016)									
Treatment effect	0.019	0.044	-0.006	0.019	0.006	0.034	0.018	0.071	-0.034
Standard error	(0.014)	(0.019)**	(0.019)	(0.021)	(0.030)	(0.030)	(0.018)	(0.025)***	(0.025)
Comparison mean	0.912	0.902	0.924	0.925	0.924	0.926	0.904	0.886	0.922
p-value on equality of effect	*(5)=(6)=(8)=(9): .025**	*(2)=(3): .062**			*(5)=(6): .514*		*(4)=(7): .962*	*(8)=(9): .002****	
Migrated to different district since 2008 (2016)									
Treatment effect	-0.027	-0.030	-0.023	-0.037	-0.060	-0.017	-0.020	-0.011	-0.029
Standard error	(0.024)	(0.034)	(0.034)	(0.038)	(0.053)	(0.053)	(0.031)	(0.044)	(0.043)
Comparison mean	0.534	0.543	0.525	0.525	0.512	0.539	0.540	0.565	0.516
p-value on equality of effect	*(5)=(6)=(8)=(9): .908*	*(2)=(3): .884*			*(5)=(6): .569*		*(4)=(7): .721*	*(8)=(9): .770*	
Lives with guardians (2016)									
Treatment effect	0.034	-0.007	0.077	0.006	0.023	-0.004	0.054	-0.027	0.133
Standard error	(0.025)	(0.035)	(0.035)**	(0.039)	(0.055)	(0.054)	(0.032)*	(0.045)	(0.045)***
Comparison mean	0.454	0.496	0.410	0.459	0.495	0.419	0.451	0.496	0.404
p-value on equality of effect	*(5)=(6)=(8)=(9): .065**	*(2)=(3): .088**			*(5)=(6): .725*		*(4)=(7): .345*	*(8)=(9): .012***	
Panel C. 2013 and 2015 Labor Market Outcomes									
Inv. hyperbolic sine earnings (2013)									
Treatment effect	0.325	0.627	-0.011	0.416	0.775	-0.016	0.258	0.523	-0.019
standard error	(0.136)**	(0.187)***	(0.186)	(0.212)**	(0.291)***	(0.290)	(0.177)	(0.243)**	(0.242)
Comparison mean	2.225	1.494	2.986	2.301	1.437	3.228	2.173	1.535	2.825
p-value on equality of effect	*(5)=(6)=(8)=(9): .093**	*(2)=(3): .015***			*(5)=(6): .054**		*(4)=(7): .567*	*(8)=(9): .114*	
Inv. hyperbolic sine earnings (2015)									
Treatment effect	0.254	0.101	0.377	0.359	-0.024	0.657	0.183	0.183	0.184
standard error	(0.145)*	(0.200)	(0.200)*	(0.228)	(0.314)	(0.315)**	(0.188)	(0.260)	(0.258)
Comparison mean	2.692	2.064	3.346	2.567	1.906	3.293	2.777	2.176	3.381
p-value on equality of effect	*(5)=(6)=(8)=(9): .465*	*(2)=(3): .329*			*(5)=(6): .125*		*(4)=(7): .552*	*(8)=(9): .997*	
Log earnings last month (2013)									
Treatment effect	-0.030	-0.000	0.008	-0.067	0.120	-0.123	-0.003	-0.081	0.105
standard error	(0.076)	(0.117)	(0.097)	(0.117)	(0.182)	(0.146)	(0.101)	(0.153)	(0.130)
Comparison mean	4.634	4.322	4.813	4.629	4.194	4.865	4.638	4.409	4.775
p-value on equality of effect	*(5)=(6)=(8)=(9): .556*	*(2)=(3): .959*			*(5)=(6): .298*		*(4)=(7): .678*	*(8)=(9): .353*	
Log earnings last month (2015)									
Treatment effect	0.159	0.201	0.107	0.057	0.185	-0.081	0.220	0.216	0.224
standard error	(0.072)**	(0.112)*	(0.089)	(0.114)	(0.185)	(0.139)	(0.092)**	(0.139)	(0.117)*
Comparison mean	4.941	4.625	5.165	5.074	4.705	5.336	4.860	4.576	5.061
p-value on equality of effect	*(5)=(6)=(8)=(9): .335*	*(2)=(3): .511*			*(5)=(6): .251*		*(4)=(7): .264*	*(8)=(9): .966*	
Positive earnings (2013)									
Treatment effect	0.064	0.124	-0.001	0.084	0.145	0.012	0.050	0.110	-0.012
standard error	(0.025)***	(0.034)***	(0.034)	(0.038)**	(0.053)***	(0.053)	(0.032)	(0.045)**	(0.044)
Comparison mean	0.418	0.298	0.542	0.432	0.294	0.581	0.408	0.301	0.517
p-value on equality of effect	*(5)=(6)=(8)=(9): .065**	*(2)=(3): .009****			*(5)=(6): .077**		*(4)=(7): .491*	*(8)=(9): .053**	

Table A3: Other Impacts of the Scholarship cont.

	Combined			Academic Major Admits			Vocational Major Admits		
	All	Female	Male	All	Female	Male	All	Female	Male
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Panel C. 2013 and 2015 Labor Market outcomes cont.									
Positive earnings (2015)									
Treatment effect	0.031	0.004	0.054	0.057	-0.016	0.118	0.013	0.017	0.010
standard error	(0.025)	(0.034)	(0.034)	(0.039)	(0.054)	(0.054)**	(0.032)	(0.045)	(0.044)
Comparison mean	0.478	0.388	0.571	0.445	0.353	0.546	0.500	0.413	0.588
p-value on equality of effect	*(5)=(6)=(8)=(9): .302*	*(2)=(3): .306*			*(5)=(6): .079**		*(4)=(7): .388*	*(8)=(9): .916*	
Total earnings last month (GHX) (2013)									
Treatment effect	2.070	15.415	-13.024	1.765	21.440	-21.590	2.209	11.219	-7.502
standard error	(6.630)	(9.105)*	(9.059)	(10.365)	(14.209)	(14.168)	(8.642)	(11.873)	(11.799)
Comparison mean	69.166	33.327	106.490	70.397	28.305	115.565	68.325	36.840	100.455
p-value on equality of effect	*(5)=(6)=(8)=(9): .118*	*(2)=(3): .026***			*(5)=(6): .032***		*(4)=(7): .973*	*(8)=(9): .263*	
Total earnings last month (GHX) (2015)									
Treatment effect	18.190	12.262	21.979	18.993	11.098	20.495	17.578	13.011	22.243
standard error	(9.324)*	(12.779)	(12.756)*	(14.671)	(20.058)	(20.107)	(12.092)	(16.590)	(16.512)
Comparison mean	105.697	58.760	154.624	109.897	56.476	168.662	102.837	60.386	145.500
p-value on equality of effect	*(5)=(6)=(8)=(9): .964*	*(2)=(3): .590*			*(5)=(6): .740*		*(4)=(7): .940*	*(8)=(9): .693*	
Total hours worked last month (2015)									
Treatment effect	-5.096	-12.446	1.531	-8.640	-28.553	8.950	-2.650	-1.616	-3.610
standard error	(6.197)	(8.706)	(8.690)	(9.751)	(13.659)**	(13.692)	(8.037)	(11.297)	(11.244)
Comparison mean	128.362	113.605	143.745	123.714	107.273	141.800	131.526	118.109	145.010
p-value on equality of effect	*(5)=(6)=(8)=(9): .250*	*(2)=(3): .255*			*(5)=(6): .052**		*(4)=(7): .635*	*(8)=(9): .900*	
Worked over 10 hours in the past month (2015)									
Treatment effect	-0.013	-0.057	0.028	0.009	-0.073	0.080	-0.028	-0.046	-0.009
standard error	(0.024)	(0.034)*	(0.034)	(0.038)	(0.053)	(0.053)	(0.031)	(0.044)	(0.044)
Comparison mean	0.625	0.573	0.679	0.599	0.531	0.673	0.642	0.602	0.682
p-value on equality of effect	*(5)=(6)=(8)=(9): .174*	*(2)=(3): .077**			*(5)=(6): .040***		*(4)=(7): .458*	*(8)=(9): .544*	
Total hours worked last month if positive (2015)									
Treatment effect	-2.584	-0.702	-4.807	-16.002	-27.710	-9.474	6.465	15.076	-1.135
standard error	(6.159)	(9.352)	(8.202)	(9.721)	(15.343)*	(12.639)	(7.954)	(11.768)	(10.790)
Comparison mean	204.288	196.877	210.827	205.313	200.523	209.477	203.637	194.590	211.693
p-value on equality of effect	*(5)=(6)=(8)=(9): .154*	*(2)=(3): .741*			*(5)=(6): .359*		*(4)=(7): .073**	*(8)=(9): .310*	
Earnings per hour if worked over 10 hours (2015)									
Treatment effect	0.155	0.100	0.145	0.079	0.188	-0.111	0.201	0.053	0.307
standard error	(0.100)	(0.148)	(0.130)	(0.157)	(0.243)	(0.200)	(0.129)	(0.187)	(0.171)*
Comparison mean	0.999	0.656	1.301	1.152	0.667	1.573	0.902	0.649	1.127
p-value on equality of effect	*(5)=(6)=(8)=(9): .433*	*(2)=(3): .823*			*(5)=(6): .342*		*(4)=(7): .548*	*(8)=(9): .314*	
Panel D. Earnings Quantiles									
30th quantile of total earnings last month (2016)									
Treatment effect	0.000	0.000	21.000	0.000	0.000	-0.000	0.000	-0.000	52.000
standard error	(2.251)	(2.643)	(29.518)	(3.313)	(3.837)	(5.113)	(3.070)	(3.397)	(27.343)*
Comparison mean	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
p-value on equality of effect	*(5)=(6)=(8)=(9): .310*	*(2)=(3): .477*			*(5)=(6): .999*		*(4)=(7): 1*	*(8)=(9): .059**	
40th quantile of total earnings last month (2016)									
Treatment effect	20.000	0.000	20.000	0.000	0.000	-30.000	50.000	0.000	30.000
standard error	(2.709)***	(4.052)	(14.432)	(2.965)	(5.450)	(33.909)	(14.432)***	(4.829)	(20.554)
Comparison mean	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
p-value on equality of effect	*(5)=(6)=(8)=(9): .402*	*(2)=(3): .182*			*(5)=(6): .382*		*(4)=(7): .000****	*(8)=(9): .155*	
50th quantile of total earnings last month (2016)									
Treatment effect	33.438	12.000	-20.000	-2.800	0.000	-30.000	44.000	35.000	-0.000
standard error	(12.332)***	(4.076)***	(13.171)	(10.992)	(6.171)	(23.109)	(12.843)***	(20.662)*	(16.010)
Comparison mean	45.000	45.000	45.000	45.000	45.000	45.000	45.000	45.000	45.000
p-value on equality of effect	*(5)=(6)=(8)=(9): .206*	*(2)=(3): .019***			*(5)=(6): .209*		*(4)=(7): .005****	*(8)=(9): .180*	
60th quantile of total earnings last month (2016)									
Treatment effect	17.333	34.500	-10.833	10.000	20.588	-43.824	29.000	41.235	16.706
standard error	(11.845)	(16.727)**	(19.664)	(21.002)	(12.845)	(34.985)	(15.531)*	(18.405)**	(27.464)
Comparison mean	100.000	100.000	100.000	100.000	100.000	100.000	100.000	100.000	100.000
p-value on equality of effect	*(5)=(6)=(8)=(9): .191*	*(2)=(3): .088**			*(5)=(6): .083**		*(4)=(7): .463*	*(8)=(9): .458*	
70th quantile of total earnings last month (2016)									
Treatment effect	6.667	49.000	2.500	-7.692	31.250	-18.750	18.462	54.250	14.500
standard error	(13.718)	(15.589)***	(17.186)	(22.537)	(24.031)	(33.518)	(18.194)	(21.155)**	(21.501)
Comparison mean	152.000	152.000	152.000	152.000	152.000	152.000	152.000	152.000	152.000
p-value on equality of effect	*(5)=(6)=(8)=(9): .285*	*(2)=(3): .046***			*(5)=(6): .205*		*(4)=(7): .372*	*(8)=(9): .194*	
80th quantile of total earnings last month (2016)									
Treatment effect	2.571	15.909	-1.364	-5.000	14.000	-45.200	15.000	22.400	5.400
standard error	(18.061)	(19.595)	(24.843)	(31.943)	(24.707)	(45.367)	(20.174)	(26.512)	(27.190)
Comparison mean	225.000	225.000	225.000	225.000	225.000	225.000	225.000	225.000	225.000
p-value on equality of effect	*(5)=(6)=(8)=(9): .637*	*(2)=(3): .596*			*(5)=(6): .260*		*(4)=(7): .594*	*(8)=(9): .663*	

Table A3 continues on next page

Table A3: Other Impacts of the Scholarship cont.

	Combined			Academic Major Admits			Vocational Major Admits		
	All	Female	Male	All	Female	Male	All	Female	Male
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Panel D. Earnings Quantiles cont.									
90th quantile of total earnings last month (2016)									
Treatment effect	-2.500	-1.750	30.000	-41.000	10.429	-98.143	16.000	-17.571	75.143
standard error	(25.717)	(33.798)	(65.232)	(48.375)	(49.543)	(123.420)	(37.391)	(38.860)	(50.430)
Comparison mean	352.000	352.000	352.000	352.000	352.000	352.000	352.000	352.000	352.000
p-value on equality of effect	*(5)=(6)=(8)=(9): .374*	*(2)=(3): .655*			*(5)=(6): .392*		*(4)=(7): .362*	*(8)=(9): .138*	
30th quantile of inverse hyperbolic sine earnings last month (2016)									
Treatment effect	0.000	0.000	3.738	0.000	0.000	0.000	0.000	-0.000	4.644
standard error	(0.091)	(0.134)	(0.736)***	(0.133)	(0.257)	(0.349)	(0.125)	(0.232)	(0.288)***
Comparison mean	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
p-value on equality of effect	*(5)=(6)=(8)=(9): 0.000*** (2)=(3): 6.25******				*(5)=(6): .999*		*(4)=(7): 1*	*(8)=(9): 5.78****	
40th quantile of inverse hyperbolic sine earnings last month (2016)									
Treatment effect	3.690	-0.000	0.288	0.000	0.000	-0.693	4.605	0.000	0.357
standard error	(0.738)***	(0.065)	(0.225)	(0.182)	(0.094)	(0.873)	(0.223)***	(0.087)	(0.246)
Comparison mean	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
p-value on equality of effect	*(5)=(6)=(8)=(9): .450*	*(2)=(3): .218*			*(5)=(6): .429*		*(4)=(7): 5.99****	*(8)=(9): .171*	
50th quantile of inverse hyperbolic sine earnings last month (2016)									
Treatment effect	0.499	3.307	-0.167	0.000	0.000	-0.250	0.639	4.211	0.000
standard error	(0.199)**	(2.577)	(0.144)	(0.463)	(0.088)	(0.278)	(0.215)***	(0.651)***	(0.153)
Comparison mean	4.500	4.500	4.500	4.500	4.500	4.500	4.500	4.500	4.500
p-value on equality of effect	*(5)=(6)=(8)=(9): 0.000*** (2)=(3): .178*				*(5)=(6): .392*		*(4)=(7): .209*	*(8)=(9): 3.94****	
60th quantile of inverse hyperbolic sine earnings last month (2016)									
Treatment effect	0.161	0.615	-0.052	0.105	0.630	-0.264	0.223	0.758	0.129
standard error	(0.116)	(0.306)**	(0.123)	(0.206)	(0.908)	(0.238)	(0.132)*	(0.333)**	(0.147)
Comparison mean	5.298	5.298	5.298	5.298	5.298	5.298	5.298	5.298	5.298
p-value on equality of effect	*(5)=(6)=(8)=(9): .086* (2)=(3): .043***				*(5)=(6): .341*		*(4)=(7): .629*	*(8)=(9): .084**	
70th quantile of inverse hyperbolic sine earnings last month (2016)									
Treatment effect	0.047	0.398	-0.000	-0.046	0.348	-0.145	0.112	0.490	0.058
standard error	(0.090)	(0.176)**	(0.109)	(0.157)	(0.303)	(0.199)	(0.109)	(0.215)**	(0.137)
Comparison mean	5.717	5.717	5.717	5.717	5.717	5.717	5.717	5.717	5.717
p-value on equality of effect	*(5)=(6)=(8)=(9): .144*	*(2)=(3): .055**			*(5)=(6): .176*		*(4)=(7): .409*	*(8)=(9): .091**	
80th quantile of inverse hyperbolic sine earnings last month (2016)									
Treatment effect	0.010	0.083	-0.000	-0.025	0.068	-0.127	0.039	0.137	0.031
standard error	(0.084)	(0.136)	(0.105)	(0.147)	(0.213)	(0.180)	(0.103)	(0.177)	(0.134)
Comparison mean	6.109	6.109	6.109	6.109	6.109	6.109	6.109	6.109	6.109
p-value on equality of effect	*(5)=(6)=(8)=(9): .767*	*(2)=(3): .630*			*(5)=(6): .483*		*(4)=(7): .722*	*(8)=(9): .635*	
90th quantile of inverse hyperbolic sine earnings last month (2016)									
Treatment effect	-0.028	-0.049	0.086	-0.169	0.051	-0.147	0.046	-0.083	0.146
standard error	(0.085)	(0.119)	(0.116)	(0.140)	(0.198)	(0.183)	(0.107)	(0.152)	(0.132)
Comparison mean	6.557	6.557	6.557	6.557	6.557	6.557	6.557	6.557	6.557
p-value on equality of effect	*(5)=(6)=(8)=(9): .524*	*(2)=(3): .418*			*(5)=(6): .465*		*(4)=(7): .223*	*(8)=(9): .253*	
Panel E. Economic Preferences									
Amount willing to invest in high payoff but risky business (2013)									
Treatment effect	1.099	0.284	1.886	1.200	-0.905	3.167	1.083	1.156	1.026
standard error	(1.452)	(2.060)	(2.050)	(2.268)	(3.213)	(3.204)	(1.891)	(2.685)	(2.669)
Comparison mean	51.077	51.136	51.015	49.907	49.498	50.346	51.876	52.281	51.462
p-value on equality of effect	*(5)=(6)=(8)=(9): .847*	*(2)=(3): .581*			*(5)=(6): .369*		*(4)=(7): .968*	*(8)=(9): .972*	
Time consistent (2013)									
Treatment effect	-0.014	-0.019	-0.010	-0.008	-0.014	-0.004	-0.019	-0.022	-0.015
standard error	(0.023)	(0.033)	(0.033)	(0.037)	(0.052)	(0.052)	(0.031)	(0.044)	(0.043)
Comparison mean	0.340	0.344	0.336	0.340	0.329	0.351	0.340	0.354	0.326
p-value on equality of effect	*(5)=(6)=(8)=(9): .995*	*(2)=(3): .856*			*(5)=(6): .895*		*(4)=(7): .823*	*(8)=(9): .913*	
Present-bias (2013)									
Treatment effect	0.014	0.046	-0.016	0.038	0.055	0.023	-0.001	0.040	-0.042
standard error	(0.022)	(0.031)	(0.031)	(0.034)	(0.048)	(0.048)	(0.028)	(0.040)	(0.040)
Comparison mean	0.250	0.244	0.256	0.231	0.242	0.220	0.263	0.246	0.279
p-value on equality of effect	*(5)=(6)=(8)=(9): .366*	*(2)=(3): .149*			*(5)=(6): .634*		*(4)=(7): .371*	*(8)=(9): .147*	
Panel F. Scholarship Costs									
Average monthly earnings between Jan 2009 and Dec 2009									
Treatment effect	-10.439	-6.458	-14.620	-12.358	-7.354	-17.871	-9.147	-5.842	-12.502
standard error	(2.076)***	(2.927)**	(2.912)***	(3.244)***	(4.568)	(4.555)***	(2.705)***	(3.817)	(3.793)***
Comparison mean	17.374	12.208	22.755	18.539	12.039	25.514	16.580	12.326	20.921
p-value on equality of effect	*(5)=(6)=(8)=(9): .182*	*(2)=(3): .048***			*(5)=(6): .103*		*(4)=(7): .447*	*(8)=(9): .216*	
Average monthly earnings between Jan 2010 and Dec 2010									
Treatment effect	-9.287	-6.157	-12.569	-11.609	-9.712	-13.931	-7.708	-3.679	-11.750
standard error	(1.944)***	(2.746)**	(2.732)***	(3.037)***	(4.286)**	(4.273)***	(2.532)***	(3.581)	(3.559)***
Comparison mean	13.490	9.593	17.550	14.824	10.476	19.490	12.580	8.975	16.260
p-value on equality of effect	*(5)=(6)=(8)=(9): .249*	*(2)=(3): .098**			*(5)=(6): .485*		*(4)=(7): .324*	*(8)=(9): .110*	

Table A3 continues on next page

Table A3: Other Impacts of the Scholarship cont.

	Combined			Academic Major Admits			Vocational Major Admits		
	All	Female	Male	All	Female	Male	All	Female	Male
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Panel F. Scholarship Costs cont.									
Average monthly earnings between Jan 2011 and Dec 2011									
Treatment effect	-6.383	-5.075	-7.767	-9.301	-7.038	-11.835	-4.349	-3.690	-5.015
standard error	(1.718)***	(2.434)**	(2.422)***	(2.684)***	(3.798)*	(3.787)***	(2.238)*	(3.173)	(3.153)
Comparison mean	10.548	8.450	12.734	10.786	7.321	14.505	10.386	9.240	11.556
p-value on equality of effect	*(5)=(6)=(8)=(9): .390*	*(2)=(3): .433*			*(5)=(6): .371*		*(4)=(7): .156*	*(8)=(9): .767*	
Average monthly earnings between Jan 2012 and July 2012									
Treatment effect	-2.316	-2.295	-2.382	-3.998	-3.264	-4.846	-1.144	-1.616	-0.692
standard error	(0.822)***	(1.164)**	(1.158)**	(1.283)***	(1.816)*	(1.811)***	(1.070)	(1.518)	(1.508)
Comparison mean	4.615	3.810	5.454	5.021	3.757	6.377	4.338	3.847	4.840
p-value on equality of effect	*(5)=(6)=(8)=(9): .309*	*(2)=(3): .957*			*(5)=(6): .537*		*(4)=(7): .087**	*(8)=(9): .665*	
Estimated yearly transportation, in-kind and other SHS costs (GHX)(2013)									
Treatment effect	84.483	73.653	94.039	69.444	62.643	73.625	94.749	81.211	107.855
standard error	(11.739)***	(16.606)***	(16.492)***	(18.351)***	(25.991)**	(25.761)***	(15.293)***	(21.621)***	(21.513)***
Comparison mean	118.578	96.901	141.042	128.148	102.290	155.775	112.087	93.152	131.307
p-value on equality of effect	*(5)=(6)=(8)=(9): .555*	*(2)=(3): .383*			*(5)=(6): .764*		*(4)=(7): .289*	*(8)=(9): .382*	
Panel G. Technology Adoption									
Knows how to use the internet (2013)									
Treatment effect	0.044	0.028	0.050	0.007	-0.014	0.011	0.069	0.058	0.077
standard error	(0.024)*	(0.032)	(0.031)	(0.037)	(0.049)	(0.049)	(0.031)**	(0.041)	(0.041)*
Comparison mean	0.386	0.224	0.555	0.417	0.257	0.588	0.366	0.201	0.533
p-value on equality of effect	*(5)=(6)=(8)=(9): .464*	*(2)=(3): .623*			*(5)=(6): .718*		*(4)=(7): .196*	*(8)=(9): .746*	
Has an email address (2013)									
Treatment effect	0.021	0.019	0.020	0.005	0.012	-0.010	0.033	0.023	0.040
standard error	(0.018)	(0.025)	(0.025)	(0.029)	(0.040)	(0.040)	(0.024)	(0.033)	(0.033)
Comparison mean	0.158	0.078	0.242	0.171	0.082	0.267	0.149	0.075	0.225
p-value on equality of effect	*(5)=(6)=(8)=(9): .797*	*(2)=(3): .969*			*(5)=(6): .690*		*(4)=(7): .452*	*(8)=(9): .716*	
Has a facebook account (2013)									
Treatment effect	0.020	0.016	0.017	-0.009	-0.016	-0.014	0.040	0.039	0.039
standard error	(0.021)	(0.029)	(0.029)	(0.033)	(0.045)	(0.045)	(0.028)	(0.038)	(0.037)
Comparison mean	0.245	0.128	0.368	0.267	0.150	0.392	0.231	0.113	0.351
p-value on equality of effect	*(5)=(6)=(8)=(9): .634*	*(2)=(3): .976*			*(5)=(6): .979*		*(4)=(7): .252*	*(8)=(9): .997*	
Owns computer (2013)									
Treatment effect	-0.010	0.000	-0.024	0.010	0.001	0.013	-0.024	0.000	-0.049
standard error	(0.013)	(0.018)	(0.018)	(0.020)	(0.028)	(0.028)	(0.017)	(0.023)	(0.023)**
Comparison mean	0.078	0.016	0.143	0.057	0.007	0.112	0.092	0.023	0.163
p-value on equality of effect	*(5)=(6)=(8)=(9): .276*	*(2)=(3): .338*			*(5)=(6): .752*		*(4)=(7): .197*	*(8)=(9): .135*	
Has an email address (2015)									
Treatment effect	0.043	0.055	0.025	0.026	0.060	-0.020	0.055	0.051	0.057
standard error	(0.021)**	(0.029)*	(0.029)	(0.033)	(0.045)	(0.045)	(0.027)**	(0.037)	(0.037)
Comparison mean	0.240	0.120	0.364	0.241	0.129	0.363	0.239	0.114	0.365
p-value on equality of effect	*(5)=(6)=(8)=(9): .519*	*(2)=(3): .460*			*(5)=(6): .209*		*(4)=(7): .498*	*(8)=(9): .919*	
Has an email address (2016)									
Treatment effect	0.050	0.040	0.051	0.013	-0.013	0.025	0.075	0.077	0.068
standard error	(0.023)**	(0.032)	(0.032)	(0.036)	(0.050)	(0.050)	(0.030)**	(0.041)*	(0.041)*
Comparison mean	0.341	0.218	0.469	0.366	0.265	0.477	0.323	0.185	0.463
p-value on equality of effect	*(5)=(6)=(8)=(9): .494*	*(2)=(3): .813*			*(5)=(6): .589*		*(4)=(7): .189*	*(8)=(9): .887*	
Has a facebook account (2016)									
Treatment effect	0.048	0.082	0.004	0.028	0.101	-0.060	0.062	0.069	0.048
standard error	(0.024)**	(0.033)**	(0.032)	(0.038)	(0.051)**	(0.051)	(0.031)**	(0.042)	(0.042)
Comparison mean	0.481	0.320	0.650	0.494	0.343	0.658	0.472	0.303	0.645
p-value on equality of effect	*(5)=(6)=(8)=(9): .123*	*(2)=(3): .090**			*(5)=(6): .025***		*(4)=(7): .500*	*(8)=(9): .725*	
Facebook on mobile (2016)									
Treatment effect	0.029	0.061	-0.011	0.026	0.099	-0.058	0.032	0.036	0.022
standard error	(0.023)	(0.032)*	(0.032)	(0.037)	(0.051)*	(0.050)	(0.030)	(0.042)	(0.041)
Comparison mean	0.347	0.217	0.484	0.348	0.223	0.485	0.347	0.213	0.483
p-value on equality of effect	*(5)=(6)=(8)=(9): .177*	*(2)=(3): .112*			*(5)=(6): .028***		*(4)=(7): .899*	*(8)=(9): .809*	
Observations	2011	1015	996	816	415	401	1195	600	595

Notes: Year of survey in parentheses. See Table 3 notes for description of columns and rows; all regressions control for region fixed effects, JHS finishing exam score (BECE) and missing JHS finishing exam scores; standard errors in parentheses, with ***, **, * indicating significance at 1, 5 and 10%. "Estimated yearly transportation, in-kind and other SHS costs" is based off costs reported in the respondent's last semester of SHS as of 2013. The estimate adjusts for the number of terms of SHS the respondent attended to an estimated average yearly cost from 2009-2013.

Table A4: Comparing Compliers and Always Takers

	Combined			Academic Major Admits			Vocational Major Admits		
	All	Female	Male	All	Female	Male	All	Female	Male
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Age in 2008									
Complier-Always Taker Differenc	0.160	0.272	0.064	-0.004	0.086	-0.097	0.277	0.408	0.178
Standard error	(0.081)**	(0.121)**	(0.110)	(0.126)	(0.184)	(0.173)	(0.106)***	(0.159)**	(0.142)
Always Taker mean	17.075	16.894	17.227	17.088	16.968	17.202	17.065	16.836	17.242
Completed BECE in 2007									
Complier-Always Taker Differenc	0.033	0.077	-0.001	0.030	0.082	-0.001	0.036	0.076	-0.001
Standard error	(0.016)**	(0.023)***	(0.021)	(0.025)	(0.035)**	(0.032)	(0.021)*	(0.030)**	(0.027)
Always Taker mean	0.084	0.182	0.000	0.097	0.199	0.000	0.074	0.169	0.000
BECE exam performance									
Complier-Always Taker Differenc	-0.004	-0.010	0.002	-0.004	-0.015	0.005	-0.003	-0.007	-0.001
Standard error	(0.004)	(0.006)*	(0.006)	(0.007)	(0.009)	(0.009)	(0.005)	(0.008)	(0.007)
Always Taker mean	0.630	0.628	0.632	0.635	0.635	0.636	0.626	0.622	0.629
No male head in the household									
Complier-Always Taker Differenc	0.006	-0.039	0.045	0.020	-0.026	0.060	-0.003	-0.052	0.035
Standard error	(0.027)	(0.040)	(0.037)	(0.042)	(0.062)	(0.058)	(0.036)	(0.053)	(0.048)
Always Taker mean	0.421	0.456	0.391	0.390	0.404	0.377	0.443	0.497	0.401
Number of HH members									
Complier-Always Taker Differenc	-0.075	-0.192	0.023	-0.241	-0.173	-0.301	0.042	-0.197	0.231
Standard error	(0.130)	(0.193)	(0.176)	(0.202)	(0.294)	(0.278)	(0.169)	(0.255)	(0.227)
Always Taker mean	5.660	5.692	5.633	5.858	5.801	5.914	5.519	5.605	5.452
Years of education of HH head									
Complier-Always Taker Differenc	-0.350	-0.547	-0.186	-0.688	-0.574	-0.777	-0.110	-0.484	0.193
Standard error	(0.296)	(0.438)	(0.400)	(0.459)	(0.669)	(0.632)	(0.385)	(0.579)	(0.517)
Always Taker mean	5.953	6.069	5.855	6.525	6.628	6.426	5.545	5.619	5.488
Highest education of HH head: tertiary									
Complier-Always Taker Differenc	-0.016	-0.030	-0.005	-0.045	-0.048	-0.041	0.004	-0.015	0.020
Standard error	(0.012)	(0.018)	(0.017)	(0.019)**	(0.028)*	(0.026)	(0.016)	(0.024)	(0.021)
Always Taker mean	0.060	0.071	0.051	0.079	0.096	0.062	0.047	0.052	0.044
Perceived returns to SHS (%)									
Complier-Always Taker Differenc	27.931	61.710	1.798	43.089	214.494	-103.758	20.530	-46.676	70.100
Standard error	(33.363)	(50.183)	(44.628)	(52.342)	(76.463)***	(71.226)	(43.256)	(66.081)	(56.923)
Always Taker mean	276.679	275.465	277.668	308.901	258.318	356.366	252.993	289.877	225.911
Perceived returns to SHS education>100%									
Complier-Always Taker Differenc	0.029	0.030	0.028	0.072	0.147	0.012	0.000	-0.051	0.038
Standard error	(0.030)	(0.045)	(0.040)	(0.046)	(0.068)**	(0.063)	(0.038)	(0.059)	(0.051)
Always Taker mean	0.457	0.473	0.443	0.466	0.482	0.452	0.449	0.466	0.437
Ever had sex									
Complier-Always Taker Differenc	0.002	0.034	-0.022	-0.004	-0.005	0.010	0.006	0.062	-0.043
Standard error	(0.024)	(0.035)	(0.031)	(0.037)	(0.053)	(0.050)	(0.031)	(0.046)	(0.041)
Always Taker mean	0.255	0.353	0.171	0.260	0.365	0.160	0.251	0.344	0.179
Standardized score, Reading test (2013)									
Complier-Always Taker Differenc	-0.054	-0.097	-0.018	-0.062	-0.030	-0.091	-0.050	-0.145	0.030
Standard error	(0.044)	(0.066)	(0.060)	(0.069)	(0.100)	(0.094)	(0.058)	(0.087)*	(0.078)
Always Taker mean	0.340	0.348	0.334	0.409	0.390	0.426	0.291	0.315	0.273
Standardized score, Math test (2013)									
Complier-Always Taker Differenc	-0.002	0.042	-0.038	-0.043	0.051	-0.130	0.027	0.036	0.024
Standard error	(0.052)	(0.076)	(0.069)	(0.080)	(0.116)	(0.108)	(0.068)	(0.100)	(0.091)
Always Taker mean	0.248	0.111	0.364	0.289	0.131	0.433	0.219	0.096	0.318
Total standardized score (2013)									
Complier-Always Taker Differenc	-0.030	-0.023	-0.035	-0.061	0.018	-0.133	-0.009	-0.053	0.031
Standard error	(0.048)	(0.071)	(0.065)	(0.074)	(0.108)	(0.101)	(0.063)	(0.093)	(0.085)
Always Taker mean	0.341	0.256	0.414	0.404	0.291	0.506	0.297	0.229	0.351
Observations	1343	610	733	558	264	294	785	346	439

Notes: Year of survey in parentheses. Sample restricted to those who completed SHS. Always Takers defined as those in the control group who completed SHS. Compliers defined as those in the treatment group who completed SHS. Cell row 1 shows the Complier mean minus the Always Taker mean; standard errors are in the second cell row in parentheses, with ***, **, * indicating significance at 1, 5 and 10%; Always taker means are in the third cell row; all regressions control for region fixed effects. See Table 2 notes for description of columns.

Table A5: OLS IV Comparison

	Combined						Academic Major Admits						Vocational Major Admits					
	All		Female		Male		All		Female		Male		All		Female		Male	
	OLS	IV	OLS	IV	OLS	IV	OLS	IV	OLS	IV	OLS	IV	OLS	IV	OLS	IV	OLS	IV
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
Total standardized score (2013)																		
Secondary (Lower Bound)																		
Effect of year of education	0.217	0.124	0.254	0.155	0.164	0.088	0.213	0.111	0.245	0.179	0.171	0.036	0.219	0.132	0.257	0.137	0.160	0.125
Standard error	(0.011)***	(0.034)***	(0.015)***	(0.048)***	(0.016)***	(0.047)*	(0.017)***	(0.052)**	(0.024)***	(0.073)**	(0.025)***	(0.073)	(0.014)***	(0.045)***	(0.020)***	(0.064)**	(0.020)***	(0.062)**
p-value on equality of effects	*(1)=(2): .008***		*(3)=(4): .049**		*(5)=(6): .128*		*(7)=(8): .060**		*(9)=(10): .384*		*(11)=(12): .081**		*(13)=(14): .066**		*(15)=(16): .072**		*(17)=(18): .594*	
Secondary + TVI (Upper Bound)																		
Effect of year of education	0.219	0.135	0.251	0.162	0.165	0.102	0.221	0.118	0.246	0.182	0.183	0.040	0.217	0.147	0.252	0.144	0.154	0.147
Standard error	(0.011)***	(0.037)***	(0.015)***	(0.050)***	(0.016)***	(0.054)*	(0.018)***	(0.055)**	(0.024)***	(0.074)**	(0.026)***	(0.081)	(0.015)***	(0.050)***	(0.020)***	(0.068)**	(0.021)***	(0.073)**
p-value on equality of effects	*(1)=(2): .030**		*(3)=(4): .084**		*(5)=(6): .260*		*(7)=(8): .073**		*(9)=(10): .412*		*(11)=(12): .093**		*(13)=(14): .181*		*(15)=(16): .127*		*(17)=(18): .927*	
Ever enrolled in tertiary education (2016)																		
Secondary (Lower Bound)																		
Effect of year of education	0.045	0.022	0.046	0.035	0.043	0.010	0.055	0.037	0.058	0.064	0.051	0.011	0.038	0.012	0.036	0.015	0.038	0.008
Standard error	(0.004)***	(0.011)**	(0.005)***	(0.016)**	(0.005)***	(0.015)	(0.006)***	(0.017)**	(0.008)***	(0.024)***	(0.008)***	(0.023)	(0.005)***	(0.014)	(0.007)***	(0.021)	(0.007)***	(0.020)
p-value on equality of effects	*(1)=(2): .048**		*(3)=(4): .519*		*(5)=(6): .034**		*(7)=(8): .310*		*(9)=(10): .811*		*(11)=(12): .102*		*(13)=(14): .086**		*(15)=(16): .327*		*(17)=(18): .155*	
Secondary + TVI (Upper Bound)																		
Effect of year of education	0.045	0.024	0.044	0.037	0.046	0.011	0.055	0.039	0.056	0.066	0.055	0.012	0.037	0.013	0.034	0.016	0.040	0.010
Standard error	(0.004)***	(0.012)**	(0.005)***	(0.016)**	(0.005)***	(0.017)	(0.006)***	(0.018)**	(0.008)***	(0.025)***	(0.009)***	(0.026)	(0.005)***	(0.016)	(0.007)***	(0.022)	(0.007)***	(0.024)
p-value on equality of effects	*(1)=(2): .100*		*(3)=(4): .686*		*(5)=(6): .055**		*(7)=(8): .386*		*(9)=(10): .707*		*(11)=(12): .112*		*(13)=(14): .148*		*(15)=(16): .422*		*(17)=(18): .220*	
Number of children ever had (2016)																		
Secondary + Tertiary (Lower Bound)																		
Effect of year of education	-0.140	-0.096	-0.190	-0.164	-0.062	-0.022	-0.133	-0.087	-0.177	-0.127	-0.074	-0.034	-0.146	-0.103	-0.198	-0.193	-0.054	-0.014
Standard error	(0.009)***	(0.028)***	(0.011)***	(0.038)***	(0.012)***	(0.036)	(0.013)***	(0.041)**	(0.017)***	(0.055)**	(0.018)***	(0.053)	(0.011)***	(0.039)***	(0.015)***	(0.052)***	(0.015)***	(0.050)
p-value on equality of effects	*(1)=(2): .134*		*(3)=(4): .501*		*(5)=(6): .302*		*(7)=(8): .285*		*(9)=(10): .382*		*(11)=(12): .473*		*(13)=(14): .294*		*(15)=(16): .927*		*(17)=(18): .444*	
Secondary +Tertiary + TVI (Upper Bound)																		
Effect of year of education	-0.153	-0.103	-0.196	-0.170	-0.073	-0.025	-0.143	-0.093	-0.181	-0.129	-0.085	-0.038	-0.161	-0.111	-0.205	-0.204	-0.064	-0.016
Standard error	(0.009)***	(0.030)***	(0.011)***	(0.039)***	(0.012)***	(0.040)	(0.013)***	(0.043)**	(0.017)***	(0.055)**	(0.018)***	(0.059)	(0.011)***	(0.042)***	(0.015)***	(0.055)***	(0.016)***	(0.054)
p-value on equality of effects	*(1)=(2): .109*		*(3)=(4): .522*		*(5)=(6): .255*		*(7)=(8): .269*		*(9)=(10): .371*		*(11)=(12): .449*		*(13)=(14): .248*		*(15)=(16): .978*		*(17)=(18): .394*	
Inv. hyperbolic sine earnings (2016)																		
Secondary + Tertiary (Lower Bound)																		
Effect of year of education	-0.043	0.231	-0.002	0.289	-0.167	0.134	-0.125	0.007	-0.033	0.143	-0.268	-0.190	0.020	0.405	0.027	0.399	-0.091	0.389
Standard error	(0.033)	(0.110)**	(0.044)	(0.152)*	(0.046)***	(0.150)	(0.051)**	(0.160)	(0.068)	(0.223)	(0.070)***	(0.218)	(0.043)	(0.153)***	(0.058)	(0.211)*	(0.060)	(0.209)*
p-value on equality of effects	*(1)=(2): .017**		*(3)=(4): .067**		*(5)=(6): .055**		*(7)=(8): .430*		*(9)=(10): .449*		*(11)=(12): .732*		*(13)=(14): .015**		*(15)=(16): .088**		*(17)=(18): .027**	
Secondary +Tertiary + TVI (Upper Bound)																		
Effect of year of education	-0.030	0.246	0.010	0.299	-0.182	0.149	-0.113	0.007	-0.043	0.146	-0.254	-0.216	0.035	0.432	0.056	0.420	-0.125	0.422
Standard error	(0.034)	(0.118)**	(0.045)	(0.158)*	(0.047)***	(0.167)	(0.051)**	(0.171)	(0.068)	(0.228)	(0.071)***	(0.248)	(0.044)	(0.163)***	(0.059)	(0.223)*	(0.063)**	(0.227)*
p-value on equality of effects	*(1)=(2): .023**		*(3)=(4): .078**		*(5)=(6): .056**		*(7)=(8): .501*		*(9)=(10): .426*		*(11)=(12): .882*		*(13)=(14): .019**		*(15)=(16): .113*		*(17)=(18): .020**	
Log earnings last month if positive (2016)																		
Secondary + Tertiary (Lower Bound)																		
Effect of year of education	0.026	-0.013	0.071	0.032	-0.022	-0.043	0.030	-0.037	0.112	0.071	-0.041	-0.107	0.024	0.004	0.043	0.008	-0.009	0.004
Standard error	(0.015)*	(0.041)	(0.022)***	(0.061)	(0.019)	(0.052)	(0.024)	(0.061)	(0.035)***	(0.098)	(0.030)	(0.075)	(0.019)	(0.054)	(0.029)	(0.078)	(0.024)	(0.071)
p-value on equality of effects	*(1)=(2): .365*		*(3)=(4): .553*		*(5)=(6): .691*		*(7)=(8): .309*		*(9)=(10): .692*		*(11)=(12): .410*		*(13)=(14): .726*		*(15)=(16): .665*		*(17)=(18): .859*	
Secondary +Tertiary + TVI (Upper Bound)																		
Effect of year of education	0.038	-0.014	0.080	0.034	-0.013	-0.047	0.036	-0.040	0.112	0.071	-0.037	-0.121	0.040	0.004	0.058	0.008	0.003	0.004
Standard error	(0.015)**	(0.043)	(0.022)***	(0.063)	(0.019)	(0.056)	(0.023)	(0.066)	(0.035)***	(0.097)	(0.030)	(0.085)	(0.019)**	(0.058)	(0.029)**	(0.084)	(0.025)	(0.075)
p-value on equality of effects	*(1)=(2): .258*		*(3)=(4): .488*		*(5)=(6): .570*		*(7)=(8): .280*		*(9)=(10): .687*		*(11)=(12): .348*		*(13)=(14): .556*		*(15)=(16): .571*		*(17)=(18): .989*	
Positive earnings (2016)																		
Secondary + Tertiary (Lower Bound)																		
Effect of year of education	-0.010	0.041	-0.006	0.048	-0.026	0.030	-0.024	0.004	-0.014	0.019	-0.041	-0.021	0.001	0.071	0.001	0.070	-0.014	0.070
Standard error	(0.006)*	(0.019)**	(0.008)	(0.026)*	(0.008)***	(0.026)	(0.009)***	(0.027)	(0.012)	(0.038)	(0.012)***	(0.038)	(0.007)	(0.026)***	(0.010)	(0.036)*	(0.010)	(0.037)*
p-value on equality of effects	*(1)=(2): .009***		*(3)=(4): .047**		*(5)=(6): .043**		*(7)=(8): .338*		*(9)=(10): .408*		*(11)=(12): .609*		*(13)=(14): .010**		*(15)=(16): .066**		*(17)=(18): .027**	
Secondary +Tertiary + TVI (Upper Bound)																		
Effect of year of education	-0.009	0.044	-0.005	0.049	-0.029	0.033	-0.022	0.004	-0.016	0.019	-0.039	-0.024	0.002	0.076	0.005	0.073	-0.021	0.076
Standard error	(0.006)	(0.020)**	(0.008)	(0.027)*	(0.008)***	(0.029)	(0.009)**	(0.029)	(0.012)	(0.039)	(0.012)***	(0.044)	(0.007)	(0.028)***	(0.010)	(0.038)*	(0.011)*	(0.040)*
p-value on equality of effects	*(1)=(2): .011**		*(3)=(4): .055**		*(5)=(6): .040**		*(7)=(8): .394*		*(9)=(10): .387*		*(11)=(12): .736*		*(13)=(14): .011**		*(15)=(16): .083**		*(17)=(18): .018**	

Table A5 continues on next page

Table A5: OLS IV Comparison cont.

	Combined						Academic Major Admits						Vocational Major Admits					
	All		Female		Male		All		Female		Male		All		Female		Male	
	OLS	IV	OLS	IV	OLS	IV	OLS	IV	OLS	IV	OLS	IV	OLS	IV	OLS	IV	OLS	IV
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
Total earnings last month (GHX) (2016)																		
Secondary + Tertiary (Lower Bound)																		
Effect of year of education	-1.637	5.729	2.178	3.849	-11.144	4.683	-6.162	-13.543	2.612	-4.871	-18.756	-26.708	1.705	20.696	2.161	10.560	-5.591	29.091
Standard error	(2.524)	(8.229)	(3.400)	(11.460)	(3.501)***	(11.310)	(3.867)	(12.000)	(5.233)	(16.884)	(5.356)***	(16.453)	(3.291)	(11.501)*	(4.469)	(15.951)	(4.601)	(15.776)*
p-value on equality of effects	*(1)=(2): .392*		*(3)=(4): .888*		*(5)=(6): .181*		*(7)=(8): .558*		*(9)=(10): .672*		*(11)=(12): .645*		*(13)=(14): .112*		*(15)=(16): .612*		*(17)=(18): .034***	
Secondary +Tertiary + TVI (Upper Bound)																		
Effect of year of education	-0.386	6.125	2.988	3.984	-11.458	5.192	-5.304	-14.516	2.150	-4.900	-18.179	-30.401	3.331	22.073	3.899	11.098	-6.267	31.488
Standard error	(2.559)	(8.795)	(3.407)	(11.870)	(3.615)***	(12.538)	(3.883)	(12.862)	(5.218)	(17.192)	(5.442)***	(18.772)	(3.351)	(12.269)*	(4.490)	(16.824)	(4.805)	(17.121)*
p-value on equality of effects	*(1)=(2): .477*		*(3)=(4): .935*		*(5)=(6): .201*		*(7)=(8): .492*		*(9)=(10): .694*		*(11)=(12): .531*		*(13)=(14): .140*		*(15)=(16): .679*		*(17)=(18): .033***	
Index of risky sexual behavior(safe-->risky)(2013)																		
Secondary (Lower Bound)																		
Effect of year of education	-0.067	-0.042	-0.066	-0.012	-0.056	-0.068	-0.061	-0.036	-0.056	-0.022	-0.057	-0.044	-0.072	-0.047	-0.073	-0.004	-0.056	-0.086
Standard error	(0.007)***	(0.022)*	(0.010)***	(0.031)	(0.010)***	(0.031)**	(0.012)***	(0.034)	(0.016)***	(0.048)	(0.017)***	(0.048)	(0.009)***	(0.029)	(0.013)***	(0.042)	(0.013)***	(0.041)**
p-value on equality of effects	*(1)=(2): .275*		*(3)=(4): .096**		*(5)=(6): .719*		*(7)=(8): .493*		*(9)=(10): .499*		*(11)=(12): .799*		*(13)=(14): .409*		*(15)=(16): .112*		*(17)=(18): .480*	
Secondary + TVI (Upper Bound)																		
Effect of year of education	-0.071	-0.046	-0.063	-0.012	-0.064	-0.078	-0.061	-0.038	-0.054	-0.023	-0.059	-0.049	-0.077	-0.052	-0.070	-0.004	-0.068	-0.101
Standard error	(0.007)***	(0.024)*	(0.010)***	(0.032)	(0.011)***	(0.036)**	(0.012)***	(0.036)	(0.016)***	(0.049)	(0.017)***	(0.053)	(0.010)***	(0.033)	(0.013)***	(0.044)	(0.014)***	(0.048)**
p-value on equality of effects	*(1)=(2): .322*		*(3)=(4): .133*		*(5)=(6): .714*		*(7)=(8): .545*		*(9)=(10): .539*		*(11)=(12): .855*		*(13)=(14): .458*		*(15)=(16): .155*		*(17)=(18): .502*	
Preventative health behavior (3 questions) (2013)																		
Secondary (Lower Bound)																		
Effect of year of education	0.013	0.090	0.019	0.102	0.017	0.081	0.020	0.128	0.026	0.138	0.025	0.127	0.008	0.062	0.013	0.076	0.012	0.050
Standard error	(0.010)	(0.030)***	(0.013)	(0.042)**	(0.014)	(0.042)*	(0.015)	(0.045)***	(0.021)	(0.064)**	(0.022)	(0.064)**	(0.013)	(0.040)	(0.018)	(0.056)	(0.018)	(0.055)
p-value on equality of effects	*(1)=(2): .013***		*(3)=(4): .058**		*(5)=(6): .143*		*(7)=(8): .024***		*(9)=(10): .098**		*(11)=(12): .134*		*(13)=(14): .190*		*(15)=(16): .280*		*(17)=(18): .511*	
Secondary + TVI (Upper Bound)																		
Effect of year of education	0.010	0.098	0.017	0.107	0.015	0.093	0.024	0.136	0.026	0.140	0.035	0.141	0.001	0.069	0.010	0.080	0.002	0.058
Standard error	(0.010)	(0.032)***	(0.014)	(0.044)**	(0.014)	(0.048)*	(0.015)	(0.048)***	(0.021)	(0.066)**	(0.023)	(0.072)**	(0.013)	(0.044)	(0.018)	(0.060)	(0.019)	(0.064)
p-value on equality of effects	*(1)=(2): .009****		*(3)=(4): .051**		*(5)=(6): .119*		*(7)=(8): .027***		*(9)=(10): .097**		*(11)=(12): .156*		*(13)=(14): .139*		*(15)=(16): .256*		*(17)=(18): .403*	

Notes: Year of survey in parentheses. Col. 1, 3, 5, 7, 9, 11 show results from an OLS regression with years of education as the dependent variable. Col. 2, 4, 6, 8, 10, 12, 14, 16 and 18 show results from IV regressions using years of education as an instrument for treatment; cell row 1-3 show results excluding technical and vocational institute education (TVI), cell row 4-6 show the results including TVI education; cell row 1 and 4 show the treatment effect; cell row 2 and 5 show standard errors in parentheses, with ***, **, * indicating significance at 1, 5 and 10%; cell row 3 and 6 show the p-value from a test of equality between the OLS and the IV estimates; all regressions control for region fixed effects, JHS finishing exam score (BECE) and missing JHS finishing exam scores. Years of education are as of 2015 if 2013 was the survey year and as of 2016 if 2016 was the survey year. In 2016, 1,333 observations for OLS and 1,996 for

Table A6: Marriage, Reproductive Health and Health Behaviors from 2013 and 2015

	Combined			Academic Major Admits			Vocational Major Admits		
	All	Female	Male	All	Female	Male	All	Female	Male
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Ever lived with partner (married/cohabiting) (2013)									
Treatment effect	-0.043	-0.050	-0.033	-0.041	-0.047	-0.029	-0.045	-0.051	-0.037
Standard error	(0.016)***	(0.023)**	(0.023)	(0.026)	(0.035)	(0.035)	(0.021)**	(0.030)*	(0.029)
Comparison mean	0.137	0.211	0.060	0.139	0.204	0.069	0.136	0.216	0.054
p-value on equality of effects	*(5)=(6)=(8)=(9): .963*	*(2)=(3): .607*			*(5)=(6): .712*		*(4)=(7): .903*	*(8)=(9): .738*	
Ever pregnant/had a pregnant partner (2013)									
Treatment effect	-0.050	-0.070	-0.020	-0.048	-0.055	-0.026	-0.052	-0.081	-0.018
Standard error	(0.022)**	(0.028)**	(0.028)	(0.034)	(0.044)	(0.044)	(0.028)*	(0.037)**	(0.037)
Comparison mean	0.275	0.454	0.088	0.278	0.437	0.108	0.272	0.466	0.074
p-value on equality of effects	*(5)=(6)=(8)=(9): .629*	*(2)=(3): .210*			*(5)=(6): .646*		*(4)=(7): .935*	*(8)=(9): .224*	
Had unwanted first pregnancy (full sample) (2013)									
Treatment effect	-0.046	-0.065	-0.018	-0.039	-0.047	-0.017	-0.052	-0.078	-0.019
Standard error	(0.021)**	(0.027)**	(0.027)	(0.032)	(0.043)	(0.042)	(0.027)*	(0.036)**	(0.035)
Comparison mean	0.235	0.390	0.075	0.249	0.405	0.085	0.225	0.379	0.069
p-value on equality of effects	*(5)=(6)=(8)=(9): .612*	*(2)=(3): .219*			*(5)=(6): .617*		*(4)=(7): .761*	*(8)=(9): .238*	
Ever lived with partner(2015)									
Treatment effect	-0.091	-0.115	-0.061	-0.094	-0.075	-0.099	-0.089	-0.143	-0.037
Standard error	(0.021)***	(0.030)***	(0.029)**	(0.034)***	(0.046)	(0.046)**	(0.028)***	(0.038)***	(0.038)
Comparison mean	0.292	0.405	0.176	0.300	0.378	0.215	0.287	0.425	0.151
p-value on equality of effects	*(5)=(6)=(8)=(9): .259*	*(2)=(3): .193*			*(5)=(6): .708*		*(4)=(7): .921*	*(8)=(9): .048***	
Number of children ever had (2015)									
Treatment effect	-0.101	-0.166	-0.027	-0.118	-0.168	-0.046	-0.090	-0.165	-0.016
Standard error	(0.035)***	(0.046)***	(0.046)	(0.055)**	(0.073)**	(0.073)	(0.045)**	(0.060)***	(0.060)
Comparison mean	0.434	0.690	0.168	0.422	0.629	0.195	0.442	0.733	0.151
p-value on equality of effects	*(5)=(6)=(8)=(9): .208*	*(2)=(3): .035***			*(5)=(6): .235*		*(4)=(7): .696*	*(8)=(9): .079**	
Had unwanted first pregnancy (full sample) (2015)									
Treatment effect	-0.064	-0.104	-0.018	-0.059	-0.074	-0.032	-0.067	-0.125	-0.010
standard error	(0.023)***	(0.030)***	(0.030)	(0.036)*	(0.047)	(0.047)	(0.029)**	(0.039)***	(0.039)
Comparison mean	0.328	0.504	0.144	0.327	0.469	0.172	0.328	0.529	0.126
p-value on equality of effects	*(5)=(6)=(8)=(9): .180*	*(2)=(3): .043***			*(5)=(6): .528*		*(4)=(7): .863*	*(8)=(9): .036***	
Observations	1979	1001	978	807	408	399	1172	593	579

Notes: Year of survey in parentheses. See Table 2 notes for description of columns; all regressions control for region fixed effects, JHS finishing exam score (BECE) and missing JHS finishing exam scores; standard errors in parentheses, with ***, **, * indicating significance at 1, 5 and 10%.

Table A7: Components of Indices

	Combined			Academic Major Admits			Vocational Major Admits		
	All	Female	Male	All	Female	Male	All	Female	Male
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Panel A. Reading Test (2013)									
Able to read first sentence aloud when given document to read									
Treatment effect	0.039	0.039	0.037	0.040	0.047	0.031	0.028	0.026	0.030
Standard error	(0.016)**	(0.022)*	(0.022)*	(0.024)*	(0.034)	(0.034)	(0.020)	(0.029)	(0.028)
Comparison mean	0.876	0.851	0.902	0.904	0.885	0.925	0.871	0.850	0.892
p-value on equality of effect	*(5)=(6)=(8)=(9): .968*	*(2)=(3): .927*			*(5)=(6): .738*		*(4)=(7): .718*	*(8)=(9): .919*	
Read first paragraph aloud well or very well, as rated by surveyor									
Treatment effect	0.063	0.073	0.050	0.029	0.040	0.010	0.082	0.088	0.071
Standard error	(0.024)***	(0.034)**	(0.034)	(0.038)	(0.054)	(0.053)	(0.032)**	(0.046)*	(0.044)
Comparison mean	0.503	0.432	0.577	0.579	0.502	0.660	0.464	0.397	0.531
p-value on equality of effect	*(5)=(6)=(8)=(9): .695*	*(2)=(3): .623*			*(5)=(6): .688*		*(4)=(7): .284*	*(8)=(9): .784*	
Basic comprehension									
Treatment effect	0.046	0.046	0.044	0.043	0.055	0.029	0.042	0.037	0.044
Standard error	(0.021)**	(0.030)	(0.030)	(0.033)	(0.047)	(0.047)	(0.028)	(0.040)	(0.039)
Comparison mean	0.728	0.686	0.771	0.768	0.736	0.802	0.716	0.668	0.765
p-value on equality of effect	*(5)=(6)=(8)=(9): .983*	*(2)=(3): .964*			*(5)=(6): .700*		*(4)=(7): .996*	*(8)=(9): .902*	
Fact identification									
Treatment effect	0.042	0.041	0.041	0.039	0.084	-0.005	0.032	0.003	0.057
Standard error	(0.021)**	(0.030)	(0.030)	(0.033)	(0.047)*	(0.047)	(0.028)	(0.040)	(0.039)
Comparison mean	0.740	0.719	0.762	0.766	0.747	0.787	0.735	0.718	0.751
p-value on equality of effect	*(5)=(6)=(8)=(9): .431*	*(2)=(3): .998*			*(5)=(6): .180*		*(4)=(7): .871*	*(8)=(9): .337*	
Intermediate comprehension									
Treatment effect	-0.008	0.014	-0.030	0.003	0.015	-0.008	-0.022	0.009	-0.051
Standard error	(0.017)	(0.024)	(0.023)	(0.026)	(0.037)	(0.037)	(0.022)	(0.032)	(0.031)*
Comparison mean	0.128	0.116	0.140	0.125	0.119	0.130	0.133	0.116	0.151
p-value on equality of effect	*(5)=(6)=(8)=(9): .454*	*(2)=(3): .179*			*(5)=(6): .658*		*(4)=(7): .462*	*(8)=(9): .170*	
Advanced comprehension									
Treatment effect	0.047	0.051	0.044	0.037	0.047	0.032	0.049	0.047	0.051
Standard error	(0.024)**	(0.033)	(0.033)	(0.037)	(0.053)	(0.053)	(0.031)	(0.045)	(0.044)
Comparison mean	0.333	0.349	0.316	0.364	0.394	0.332	0.314	0.321	0.307
p-value on equality of effect	*(5)=(6)=(8)=(9): .993*	*(2)=(3): .887*			*(5)=(6): .836*		*(4)=(7): .805*	*(8)=(9): .954*	
Panel B. Math Test (2013)									
Basic Computation 1									
Treatment effect	0.013	0.036	-0.010	0.032	0.042	0.023	0.000	0.035	-0.033
Standard error	(0.013)	(0.019)*	(0.019)	(0.021)	(0.030)	(0.030)	(0.018)	(0.025)	(0.025)
Comparison mean	0.919	0.907	0.932	0.923	0.914	0.933	0.918	0.903	0.934
p-value on equality of effect	*(5)=(6)=(8)=(9): .146*	*(2)=(3): .078**			*(5)=(6): .660*		*(4)=(7): .237*	*(8)=(9): .052**	
Basic Computation 2									
Treatment effect	-0.007	-0.005	-0.008	-0.009	-0.023	0.005	-0.011	0.000	-0.021
Standard error	(0.012)	(0.017)	(0.017)	(0.019)	(0.026)	(0.026)	(0.016)	(0.022)	(0.022)
Comparison mean	0.944	0.948	0.939	0.939	0.948	0.929	0.950	0.953	0.947
p-value on equality of effect	*(5)=(6)=(8)=(9): .784*	*(2)=(3): .917*			*(5)=(6): .444*		*(4)=(7): .943*	*(8)=(9): .488*	
Basic Calculator Computation (2013)									
Treatment effect	0.017	0.031	0.001	0.033	0.067	-0.001	-0.003	-0.003	-0.006
Standard error	(0.021)	(0.029)	(0.029)	(0.033)	(0.046)	(0.046)	(0.027)	(0.039)	(0.038)
Comparison mean	0.777	0.726	0.829	0.764	0.732	0.798	0.793	0.732	0.854
p-value on equality of effect	*(5)=(6)=(8)=(9): .600*	*(2)=(3): .455*			*(5)=(6): .295*		*(4)=(7): .395*	*(8)=(9): .943*	
Numeracy (2013)									
Treatment effect	0.023	0.019	0.024	0.015	0.020	0.005	0.029	0.012	0.042
Standard error	(0.017)	(0.024)	(0.024)	(0.027)	(0.038)	(0.038)	(0.022)	(0.032)	(0.031)
Comparison mean	0.850	0.806	0.897	0.870	0.818	0.925	0.845	0.811	0.881
p-value on equality of effect	*(5)=(6)=(8)=(9): .871*	*(2)=(3): .871*			*(5)=(6): .781*		*(4)=(7): .698*	*(8)=(9): .499*	
Profit calculation (easy)									
Treatment effect	0.006	0.021	-0.010	0.034	0.070	-0.002	-0.018	-0.011	-0.026
standard error	(0.023)	(0.033)	(0.033)	(0.037)	(0.053)	(0.052)	(0.031)	(0.045)	(0.043)
Comparison mean	0.650	0.622	0.680	0.667	0.636	0.700	0.648	0.618	0.677
p-value on equality of effect	*(5)=(6)=(8)=(9): .534*	*(2)=(3): .509*			*(5)=(6): .328*		*(4)=(7): .285*	*(8)=(9): .807*	
Profit calculation (difficult)									
Treatment effect	0.004	0.046	-0.040	-0.019	0.022	-0.065	0.013	0.055	-0.028
standard error	(0.018)	(0.025)*	(0.025)	(0.029)	(0.040)	(0.040)	(0.024)	(0.034)	(0.033)
Comparison mean	0.151	0.108	0.196	0.165	0.112	0.222	0.144	0.108	0.181
p-value on equality of effect	*(5)=(6)=(8)=(9): .104*	*(2)=(3): .016***			*(5)=(6): .129*		*(4)=(7): .392*	*(8)=(9): .081**	
Identifying mode									
Treatment effect	0.032	0.033	0.029	0.035	0.043	0.024	0.027	0.030	0.023
standard error	(0.014)**	(0.019)*	(0.019)	(0.021)	(0.030)	(0.030)	(0.018)	(0.026)	(0.025)
Comparison mean	0.907	0.887	0.928	0.918	0.896	0.941	0.906	0.887	0.926
p-value on equality of effect	*(5)=(6)=(8)=(9): .959*	*(2)=(3): .871*			*(5)=(6): .650*		*(4)=(7): .784*	*(8)=(9): .854*	
Calculating sums (without help)									
Treatment effect	-0.000	0.011	-0.013	-0.030	-0.036	-0.027	0.021	0.044	-0.003
standard error	(0.018)	(0.026)	(0.026)	(0.029)	(0.041)	(0.041)	(0.024)	(0.035)	(0.034)
Comparison mean	0.168	0.135	0.202	0.176	0.149	0.206	0.164	0.129	0.199
p-value on equality of effect	*(5)=(6)=(8)=(9): .420*	*(2)=(3): .496*			*(5)=(6): .873*		*(4)=(7): .176*	*(8)=(9): .331*	

Table A7 continues on next page

Table A7: Components of Indices cont.

	Combined			Academic Major Admits			Vocational Major Admits		
	All	Female	Male	All	Female	Male	All	Female	Male
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Panel A. Math Test (2013) cont.									
Calculating sums (with explanation)									
Treatment effect	0.035	0.036	0.033	0.075	0.107	0.042	0.000	-0.017	0.014
standard error	(0.025)	(0.035)	(0.035)	(0.039)*	(0.055)*	(0.055)	(0.033)	(0.047)	(0.046)
Comparison mean	0.556	0.538	0.576	0.548	0.532	0.565	0.567	0.547	0.587
p-value on equality of effect	*(5)=(6)=(8)=(9): .377*	*(2)=(3): .955*			*(5)=(6): .406*		*(4)=(7): .141*	*(8)=(9): .645*	
Calculating percentage									
Treatment effect	0.058	0.058	0.056	0.032	0.066	-0.006	0.079	0.051	0.102
standard error	(0.020)***	(0.028)**	(0.028)**	(0.031)	(0.044)	(0.044)	(0.026)***	(0.038)	(0.036)***
Comparison mean	0.192	0.149	0.237	0.198	0.138	0.261	0.194	0.163	0.225
p-value on equality of effect	*(5)=(6)=(8)=(9): .298*	*(2)=(3): .968*			*(5)=(6): .246*		*(4)=(7): .248*	*(8)=(9): .324*	
Applied Math Skills: Exchange rate calculation									
Treatment effect	0.064	0.080	0.043	0.057	0.086	0.016	0.074	0.085	0.057
standard error	(0.024)***	(0.034)**	(0.034)	(0.039)	(0.054)	(0.054)	(0.033)**	(0.046)*	(0.045)
Comparison mean	0.477	0.385	0.573	0.476	0.366	0.593	0.484	0.403	0.566
p-value on equality of effect	*(5)=(6)=(8)=(9): .757*	*(2)=(3): .440*			*(5)=(6): .358*		*(4)=(7): .737*	*(8)=(9): .667*	
Panel C. Index of Risky Sexual Behavior (2013)									
Ever had sex									
Treatment effect	-0.037	0.003	-0.072	-0.033	0.010	-0.066	-0.047	-0.003	-0.083
standard error	(0.021)*	(0.030)	(0.029)**	(0.034)	(0.047)	(0.047)	(0.028)*	(0.040)	(0.039)**
Comparison mean	0.766	0.845	0.685	0.763	0.828	0.696	0.766	0.853	0.679
p-value on equality of effect	*(5)=(6)=(8)=(9): .319*	*(2)=(3): .071**			*(5)=(6): .255*		*(4)=(7): .737*	*(8)=(9): .149*	
Age when first had sex									
Treatment effect	-0.039	-0.063	0.011	-0.104	-0.175	-0.014	0.052	0.109	0.001
standard error	(0.115)	(0.151)	(0.174)	(0.183)	(0.243)	(0.274)	(0.153)	(0.202)	(0.231)
Comparison mean	18.305	18.110	18.555	18.255	18.159	18.375	18.341	18.080	18.672
p-value on equality of effect	*(5)=(6)=(8)=(9): .847*	*(2)=(3): .745*			*(5)=(6): .660*		*(4)=(7): .512*	*(8)=(9): .725*	
Number of sexual partners in last 6 months									
Treatment effect	-0.091	-0.095	-0.086	-0.130	-0.174	-0.074	-0.064	-0.047	-0.089
standard error	(0.041)**	(0.054)*	(0.063)	(0.065)**	(0.087)**	(0.099)	(0.055)	(0.073)	(0.083)
Comparison mean	0.699	0.708	0.688	0.725	0.729	0.722	0.693	0.719	0.660
p-value on equality of effect	*(5)=(6)=(8)=(9): .734*	*(2)=(3): .912*			*(5)=(6): .448*		*(4)=(7): .442*	*(8)=(9): .709*	
Number of sexual partners in lifetime									
Treatment effect	-0.364	-0.312	-0.415	-0.579	-0.685	-0.446	-0.271	-0.147	-0.413
standard error	(0.149)**	(0.196)	(0.226)*	(0.240)**	(0.319)**	(0.361)	(0.201)	(0.266)	(0.304)
Comparison mean	2.282	2.070	2.554	2.551	2.371	2.777	2.138	1.898	2.441
p-value on equality of effect	*(5)=(6)=(8)=(9): .633*	*(2)=(3): .731*			*(5)=(6): .620*		*(4)=(7): .324*	*(8)=(9): .509*	
Ever in a relationship with a partner >20 years older									
Treatment effect	-0.013	-0.030	0.005	-0.019	-0.062	0.030	-0.016	-0.017	-0.012
standard error	(0.013)	(0.018)	(0.018)	(0.021)	(0.029)**	(0.029)	(0.017)	(0.025)	(0.024)
Comparison mean	0.081	0.127	0.032	0.091	0.150	0.028	0.074	0.113	0.034
p-value on equality of effect	*(5)=(6)=(8)=(9): .164*	*(2)=(3): .174*			*(5)=(6): .024***		*(4)=(7): .912*	*(8)=(9): .877*	
Ever in a relationship for gifts or money									
Treatment effect	0.007	0.031	-0.011	-0.014	0.029	-0.049	0.002	0.000	0.009
standard error	(0.020)	(0.027)	(0.027)	(0.031)	(0.043)	(0.043)	(0.026)	(0.037)	(0.036)
Comparison mean	0.200	0.285	0.111	0.213	0.281	0.142	0.190	0.287	0.093
p-value on equality of effect	*(5)=(6)=(8)=(9): .616*	*(2)=(3): .281*			*(5)=(6): .201*		*(4)=(7): .700*	*(8)=(9): .862*	
Panel C. Risky Sexual Behavior (2013)									
Ever had sex with a commercial sex worker									
Treatment effect	-0.006	-0.000	-0.013	-0.006	0.000	-0.013	-0.007	-0.000	-0.014
standard error	(0.004)	(0.005)	(0.005)**	(0.006)	(0.009)	(0.009)	(0.005)	(0.007)	(0.007)*
Comparison mean	0.009	0.000	0.019	0.010	0.000	0.020	0.008	0.000	0.016
p-value on equality of effect	*(5)=(6)=(8)=(9): .412*	*(2)=(3): .093**			*(5)=(6): .296*		*(4)=(7): .881*	*(8)=(9): .184*	
Contraception last time had sex if ever had sex									
Treatment effect	0.077	0.041	0.128	0.112	0.039	0.204	0.033	0.013	0.064
standard error	(0.027)***	(0.035)	(0.040)***	(0.042)***	(0.056)	(0.063)***	(0.035)	(0.047)	(0.053)
Comparison mean	0.652	0.609	0.706	0.662	0.655	0.670	0.653	0.586	0.738
p-value on equality of effect	*(5)=(6)=(8)=(9): .100*	*(2)=(3): .106*			*(5)=(6): .051**		*(4)=(7): .153*	*(8)=(9): .475*	
Ever used contraception if ever had sex									
Treatment effect	0.037	0.020	0.061	0.028	-0.043	0.120	0.031	0.046	0.014
standard error	(0.023)	(0.031)	(0.036)*	(0.037)	(0.049)	(0.056)**	(0.031)	(0.041)	(0.047)
Comparison mean	0.776	0.766	0.789	0.796	0.824	0.761	0.766	0.728	0.812
p-value on equality of effect	*(5)=(6)=(8)=(9): .170*	*(2)=(3): .385*			*(5)=(6): .029***		*(4)=(7): .959*	*(8)=(9): .611*	
Panel D. Index of STI Exposure (2013)									
Do you do anything to protect yourself from getting infected with HIV/AIDs?									
Treatment effect	0.029	0.021	0.033	0.023	0.003	0.033	0.034	0.030	0.036
standard error	(0.018)	(0.025)	(0.025)	(0.029)	(0.040)	(0.040)	(0.024)	(0.034)	(0.033)
Comparison mean	0.836	0.783	0.892	0.823	0.753	0.897	0.840	0.797	0.883
p-value on equality of effect	*(5)=(6)=(8)=(9): .930*	*(2)=(3): .733*			*(5)=(6): .594*		*(4)=(7): .765*	*(8)=(9): .897*	

Table A7 continues on next page

Table A7: Components of Indices cont.

	Combined			Academic Major Admits			Vocational Major Admits		
	All	Female	Male	All	Female	Male	All	Female	Male
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Panel D. Index of STI Exposure (2013) cont.									
Have you had a sexually transmitted infection in past 12 months?									
Treatment effect	-0.024	-0.023	-0.024	-0.044	-0.074	-0.011	-0.018	0.002	-0.034
standard error	(0.014)*	(0.020)	(0.020)	(0.023)*	(0.032)**	(0.032)	(0.019)	(0.027)	(0.026)
Comparison mean	0.096	0.129	0.062	0.104	0.142	0.063	0.094	0.124	0.064
p-value on equality of effect	*(5)=(6)=(8)=(9): .296*	*(2)=(3): .982*			*(5)=(6): .159*		*(4)=(7): .374*	*(8)=(9): .331*	
Has partner ever told you they had a sexually transmitted infection?									
Treatment effect	-0.009	0.000	-0.019	-0.021	-0.006	-0.038	-0.002	0.005	-0.008
standard error	(0.007)	(0.010)	(0.010)*	(0.012)*	(0.017)	(0.016)**	(0.010)	(0.014)	(0.014)
Comparison mean	0.023	0.016	0.031	0.033	0.015	0.051	0.018	0.018	0.019
p-value on equality of effect	*(5)=(6)=(8)=(9): .255*	*(2)=(3): .183*			*(5)=(6): .179*		*(4)=(7): .200*	*(8)=(9): .504*	
Did you change how often you had sex after learning partner infected with STI? (1=Stopped completely, 2=Less often, 3=No change)									
Treatment effect	-0.020	-0.113	-0.235	0.297	0.892	-0.258	-0.220	-0.301	-0.221
standard error	(0.309)	(0.419)	(0.427)	(0.510)	(0.861)	(0.567)	(0.419)	(0.482)	(0.703)
Comparison mean	1.548	1.909	1.350	1.471	2.250	1.231	1.643	1.714	1.571
p-value on equality of effect	*(5)=(6)=(8)=(9): .659*	*(2)=(3): .838*			*(5)=(6): .276*		*(4)=(7): .443*	*(8)=(9): .926*	
Did you start using a condom after learning partner infected with STI? (1=Stopped completely, 2=Less often, 3=No change)									
Treatment effect	0.112	0.221	0.000	0.391	1.419	0.000	-0.220	-0.596	0.000
standard error	(0.520)	(0.582)	(0.000)	(0.790)	(0.864)	(0.000)	(0.585)	(0.596)	(0.000)
Comparison mean	2.000	2.000	2.000	1.500	1.333	1.667	2.500	2.500	2.500
p-value on equality of effect	*(5)=(6)=(8)=(9): .295*	*(2)=(3): .714*			*(5)=(6): .161*		*(4)=(7): .559*	*(8)=(9): .363*	
Did you stop having sex last time you had STI symptoms? (1=Stopped completely, 2=Less often, 3=No change)									
Treatment effect	-0.235	-0.304	-0.103	-0.367	-0.605	0.067	-0.175	-0.172	-0.258
standard error	(0.129)*	(0.157)*	(0.228)	(0.213)*	(0.290)**	(0.314)	(0.170)	(0.199)	(0.329)
Comparison mean	1.542	1.630	1.359	1.574	1.711	1.250	1.516	1.561	1.435
p-value on equality of effect	*(5)=(6)=(8)=(9): .450*	*(2)=(3): .472*			*(5)=(6): .119*		*(4)=(7): .481*	*(8)=(9): .825*	
Did you use a condom when having sex for the last time you had the STI symptoms? (1=Always, 2=Sometimes, 3=Never)									
Treatment effect	-0.093	-0.169	-0.068	-0.279	0.211	-0.504	0.052	-0.075	0.000
standard error	(0.306)	(0.331)	(0.946)	(0.616)	(0.854)	(0.943)	(0.358)	(0.381)	(0.000)
Comparison mean	2.312	2.472	1.833	2.739	2.789	2.500	1.917	2.125	1.500
p-value on equality of effect	*(5)=(6)=(8)=(9): .940*	*(2)=(3): .921*			*(5)=(6): .577*		*(4)=(7): .649*	*(8)=(9): .845*	
Panel E. Preventative Health Index									
Sleeps under an insecticide-treated mosquito net									
Treatment effect	0.032	0.045	0.021	0.046	0.087	0.015	0.023	0.017	0.030
standard error	(0.025)	(0.035)	(0.034)	(0.039)	(0.055)	(0.054)	(0.033)	(0.046)	(0.045)
Comparison mean	0.472	0.516	0.428	0.466	0.535	0.391	0.470	0.497	0.443
p-value on equality of effect	*(5)=(6)=(8)=(9): .753*	*(2)=(3): .625*			*(5)=(6): .351*		*(4)=(7): .647*	*(8)=(9): .834*	
Panel E. Preventative Health Index cont.									
Use any other method to protect yourself from mosquitos									
Treatment effect	0.055	0.042	0.068	0.050	0.025	0.076	0.054	0.052	0.054
standard error	(0.024)**	(0.035)	(0.035)**	(0.039)	(0.055)	(0.055)	(0.033)*	(0.047)	(0.045)
Comparison mean	0.457	0.439	0.475	0.454	0.446	0.462	0.455	0.429	0.480
p-value on equality of effect	*(5)=(6)=(8)=(9): .932*	*(2)=(3): .593*			*(5)=(6): .510*		*(4)=(7): .943*	*(8)=(9): .973*	
Used soap and water last time washed hands									
Treatment effect	0.031	0.031	0.034	0.076	0.064	0.091	-0.002	0.003	-0.005
standard error	(0.022)	(0.032)	(0.032)	(0.036)**	(0.050)	(0.050)*	(0.030)	(0.043)	(0.042)
Comparison mean	0.699	0.742	0.653	0.702	0.724	0.680	0.693	0.756	0.631
p-value on equality of effect	*(5)=(6)=(8)=(9): .387*	*(2)=(3): .945*			*(5)=(6): .706*		*(4)=(7): .094**	*(8)=(9): .903*	
Panel F. Mental Health Index									
In the past few days did you ever...									
Scale 1 to 5 (1=all of the time, 5=none of the time)									
feel bothered by things that usually do not bother you?									
Treatment effect	0.015	-0.015	0.045	-0.013	-0.105	0.080	0.064	0.083	0.044
standard error	(0.054)	(0.077)	(0.076)	(0.086)	(0.122)	(0.121)	(0.072)	(0.103)	(0.100)
Comparison mean	3.838	3.847	3.829	3.869	3.929	3.806	3.811	3.792	3.830
p-value on equality of effect	*(5)=(6)=(8)=(9): .641*	*(2)=(3): .578*			*(5)=(6): .281*		*(4)=(7): .495*	*(8)=(9): .789*	
have trouble keeping your mind on what you were doing?									
Treatment effect	0.032	-0.050	0.112	-0.005	-0.074	0.062	0.076	-0.002	0.149
standard error	(0.055)	(0.078)	(0.078)	(0.088)	(0.125)	(0.124)	(0.074)	(0.106)	(0.103)
Comparison mean	3.833	3.833	3.832	3.831	3.836	3.826	3.839	3.839	3.838
p-value on equality of effect	*(5)=(6)=(8)=(9): .544*	*(2)=(3): .141*			*(5)=(6): .438*		*(4)=(7): .480*	*(8)=(9): .307*	
feel depressed?									
Treatment effect	-0.017	-0.096	0.059	-0.032	-0.108	0.038	0.002	-0.051	0.049
standard error	(0.051)	(0.072)	(0.072)	(0.081)	(0.114)	(0.114)	(0.067)	(0.097)	(0.094)
Comparison mean	3.983	3.965	4.003	3.942	3.937	3.949	4.030	4.005	4.056
p-value on equality of effect	*(5)=(6)=(8)=(9): .685*	*(2)=(3): .126*			*(5)=(6): .365*		*(4)=(7): .746*	*(8)=(9): .457*	

Table A7 continues on next page

Table A7: Components of Indices cont.

	Combined			Academic Major Admits			Vocational Major Admits		
	All	Female	Male	All	Female	Male	All	Female	Male
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Panel F. Mental Health Index cont.									
feel that everything you did was an effort?									
Treatment effect	-0.062	-0.019	-0.103	-0.029	0.104	-0.149	-0.076	-0.069	-0.083
standard error	(0.067)	(0.095)	(0.094)	(0.106)	(0.150)	(0.150)	(0.089)	(0.128)	(0.124)
Comparison mean	3.156	3.188	3.122	3.108	3.179	3.032	3.191	3.198	3.184
p-value on equality of effect	*(5)=(6)=(8)=(9): .663*	*(2)=(3): .527*			*(5)=(6): .232*		*(4)=(7): .732*	*(8)=(9): .936*	
feel hopeful about the future? (reverse scored in index)									
Treatment effect	-0.052	-0.027	-0.075	-0.134	-0.210	-0.054	-0.000	0.091	-0.083
standard error	(0.039)	(0.056)	(0.056)	(0.063)**	(0.089)**	(0.088)	(0.052)	(0.075)	(0.073)
Comparison mean	1.488	1.521	1.454	1.504	1.566	1.439	1.474	1.495	1.453
p-value on equality of effect	*(5)=(6)=(8)=(9): .073**	*(2)=(3): .544*			*(5)=(6): .214*		*(4)=(7): .102*	*(8)=(9): .096**	
feel fearful?									
Treatment effect	-0.009	-0.010	-0.015	0.079	-0.000	0.142	-0.084	-0.039	-0.132
standard error	(0.050)	(0.070)	(0.070)	(0.079)	(0.112)	(0.111)	(0.066)	(0.095)	(0.092)
Comparison mean	4.238	4.143	4.337	4.219	4.116	4.328	4.258	4.171	4.347
p-value on equality of effect	*(5)=(6)=(8)=(9): .297*	*(2)=(3): .962*			*(5)=(6): .364*		*(4)=(7): .114*	*(8)=(9): .481*	
have restless sleep?									
Treatment effect	-0.018	0.002	-0.040	0.006	0.053	-0.042	-0.032	-0.015	-0.052
standard error	(0.048)	(0.067)	(0.067)	(0.075)	(0.107)	(0.106)	(0.063)	(0.091)	(0.088)
Comparison mean	4.307	4.261	4.355	4.299	4.280	4.320	4.318	4.250	4.387
p-value on equality of effect	*(5)=(6)=(8)=(9): .888*	*(2)=(3): .655*			*(5)=(6): .532*		*(4)=(7): .695*	*(8)=(9): .771*	
Observations	1982	1001	981	779	391	388	1127	561	566

Notes: Year of survey in parentheses. See Table 3 notes for description of columns and cell rows; all regressions control for region fixed effects, JHS finishing exam score (BECE) and missing JHS finishing exam scores; standard errors in parentheses, with ***, **, * indicating significance at 1, 5 and 10%.

Table A8: P-values and Sharpened q-values

		Combined			Academic Admits			Vocational Admits		
		All	Female	Male	All	Female	Male	All	Female	Male
Table	Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
3	Standardized score Reading test (2013)									
	p-value	0.003***	0.018**	0.081*	0.065*	0.085*	0.386	0.024**	0.104	0.124
	sharpened q-value	0.008***	0.046**	0.143	0.108	0.210	0.568	0.061*	0.240	0.269
3	Standardized score Math test (2013)									
	p-value	0.014**	0.011**	0.417	0.091*	0.027**	0.937	0.077*	0.140	0.318
	sharpened q-value	0.025**	0.031**	0.487	0.130	0.092*	0.929	0.120	0.300	0.526
3	Total standardized score (2013)									
	p-value	0.002***	0.004***	0.150	0.040**	0.019**	0.615	0.020**	0.070*	0.146
	sharpened q-value	0.007***	0.015**	0.239	0.080*	0.072*	0.725	0.056*	0.182	0.304
3	National political knowledge standardized score (2013)									
	p-value	0.087*	0.118	0.468	0.404	0.177	0.721	0.134	0.371	0.230
	sharpened q-value	0.071*	0.192	0.538	0.327	0.339	0.797	0.161	0.562	0.422
3	International political knowledge standardized score (2013)									
	p-value	0.099*	0.799	0.054*	0.162	0.746	0.149	0.341	0.963	0.201
	sharpened q-value	0.078*	0.683	0.103	0.181	0.815	0.306	0.299	0.929	0.368
3	Knows how to use the internet (2015)									
	p-value	0.002***	0.002***	0.199	0.013**	0.006***	0.501	0.046**	0.066*	0.250
	sharpened q-value	0.007***	0.008***	0.299	0.043**	0.032**	0.653	0.087*	0.178	0.441
3	Knows how to use the internet (2016)									
	p-value	0.032**	0.030**	0.500	0.717	0.402	0.522	0.013**	0.032**	0.158
	sharpened q-value	0.040**	0.064*	0.555	0.528	0.577	0.664	0.043**	0.102	0.316
3	Belief in traditional medicine(0 low belief to 12 high belief)(2013)									
	p-value	0.211	0.365	0.374	0.093*	0.949	0.014**	0.824	0.215	0.367
	sharpened q-value	0.146	0.473	0.473	0.130	0.929	0.060*	0.568	0.393	0.561
4	Ever enrolled in tertiary education (2016)									
	p-value	0.040**	0.019**	0.592	0.021**	0.004***	0.680	0.446	0.473	0.733
	sharpened q-value	0.046**	0.046**	0.597	0.056*	0.028**	0.774	0.362	0.640	0.807
4	Currently enrolled in tertiary program (2016)									
	p-value	0.043**	0.020**	0.617	0.016**	0.015**	0.328	0.525	0.297	0.868
	sharpened q-value	0.048**	0.046**	0.618	0.049**	0.063*	0.534	0.418	0.500	0.909
4	University (2016)									
	p-value	0.031**	0.005***	0.839	0.075*	0.019**	0.901	0.185	0.087*	0.881
	sharpened q-value	0.040**	0.019**	0.696	0.118	0.072*	0.909	0.198	0.212	0.909
4	Nurses training (2016)									
	p-value	0.371	0.661	0.381	0.455	0.144	0.782	0.591	0.537	0.170
	sharpened q-value	0.184	0.643	0.473	0.362	0.304	0.834	0.449	0.665	0.333
4	Teachers training (2016)									
	p-value	0.430	0.852	0.366	0.103	0.691	0.058*	0.746	0.940	0.693
	sharpened q-value	0.199	0.701	0.473	0.139	0.785	0.162	0.530	0.929	0.785
4	Years spent attending tertiary education (2016)									
	p-value	0.008***	0.019**	0.175	0.034**	0.012**	0.651	0.095*	0.322	0.175
	sharpened q-value	0.016**	0.046**	0.266	0.076*	0.054*	0.742	0.132	0.531	0.337
4	Total years of education to date (2016)									
	p-value	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***
	sharpened q-value	0.001***	0.001***	0.001***	0.001***	0.001***	0.001***	0.001***	0.001***	0.001***

Table A8 continues next 3 pages

Table A8: P-values and Sharpened q-values cont.

		Combined			Academic Admits			Vocational Admits		
		All	Female	Male	All	Female	Male	All	Female	Male
Table	Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
4	Plans to continue to tertiary (2013)									
	p-value	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***
	sharpened q-value	0.001***	0.001***	0.001***	0.001***	0.001***	0.001***	0.001***	0.001***	0.001***
4	Sat for WASSCE exam (2015)									
	p-value	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***
	sharpened q-value	0.001***	0.001***	0.001***	0.001***	0.001***	0.001***	0.001***	0.001***	0.001***
4	Plans to apply to tertiary (2015)									
	p-value	0.000***	0.000***	0.000***	0.000***	0.007***	0.001***	0.000***	0.000***	0.005***
	sharpened q-value	0.001***	0.001***	0.001***	0.001***	0.037**	0.007***	0.001***	0.001***	0.032**
4	Applied for tertiary education (2015)									
	p-value	0.000***	0.000***	0.064*	0.002***	0.002***	0.186	0.004***	0.005***	0.187
	sharpened q-value	0.001***	0.001***	0.117	0.010***	0.012**	0.352	0.017**	0.031**	0.352
4	if applied: number of programs applied to (2015)									
	p-value	0.612	0.880	0.557	0.790	0.646	0.526	0.660	0.794	0.783
	sharpened q-value	0.274	0.701	0.595	0.557	0.737	0.664	0.493	0.842	0.834
4	Admitted to a tertiary program (2015)									
	p-value	0.025**	0.006***	0.672	0.245	0.062*	0.787	0.052*	0.046**	0.451
	sharpened q-value	0.036**	0.021**	0.643	0.244	0.168	0.836	0.094*	0.139	0.630
5	Ever lived with partner(2016)									
	p-value	0.002***	0.001***	0.323	0.063*	0.035**	0.729	0.013**	0.012**	0.313
	sharpened q-value	0.007***	0.006***	0.438	0.107	0.109	0.806	0.043**	0.054*	0.526
5	Ever pregnant/had a pregnant partner (2016)									
	p-value	0.003***	0.001***	0.458	0.040**	0.022**	0.630	0.030**	0.012**	0.546
	sharpened q-value	0.008***	0.005***	0.538	0.080*	0.077*	0.731	0.070*	0.054*	0.676
5	Number of children ever had (2016)									
	p-value	0.001***	0.000***	0.583	0.041**	0.028**	0.525	0.013**	0.001***	0.836
	sharpened q-value	0.006***	0.001***	0.597	0.080*	0.094*	0.664	0.043**	0.006***	0.903
5	Had unwanted first pregnancy (full sample) (2016)									
	p-value	0.003***	0.000***	0.536	0.124	0.050**	0.863	0.010**	0.002***	0.497
	sharpened q-value	0.008***	0.003***	0.580	0.151	0.146	0.909	0.039**	0.016**	0.653
5	Desired fertility: # of children by age 50 (2013)									
	p-value	0.425	0.287	0.941	0.071*	0.068*	0.453	0.643	0.888	0.607
	sharpened q-value	0.199	0.404	0.778	0.112	0.178	0.630	0.481	0.909	0.721
5	Index of risky sexual behavior(safe-->risky)(2013)									
	p-value	0.077*	0.732	0.041**	0.327	0.699	0.383	0.134	0.902	0.050*
	sharpened q-value	0.070*	0.662	0.082*	0.293	0.785	0.568	0.161	0.909	0.146
5	Index of STI risk exposure (2013)									
	p-value	0.011**	0.129	0.048**	0.017**	0.068*	0.149	0.177	0.642	0.159
	sharpened q-value	0.021**	0.209	0.095*	0.051*	0.178	0.306	0.194	0.737	0.316
5	Preventative health behavior (3 questions) (2013)									
	p-value	0.002***	0.022**	0.034**	0.004***	0.030**	0.043**	0.117	0.244	0.280
	sharpened q-value	0.008***	0.050*	0.071*	0.020**	0.098*	0.131	0.149	0.431	0.473

Table A8 continues next 2 pages

Table A8: P-values and Sharpened q-values cont.

		Combined			Academic Admits			Vocational Admits		
		All	Female	Male	All	Female	Male	All	Female	Male
Table	Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
6	Inv. hyperbolic sine earnings (2016)									
	p-value	0.033**	0.054*	0.370	0.934	0.495	0.386	0.007***	0.053*	0.059*
	sharpened q-value	0.040**	0.103	0.473	0.625	0.653	0.568	0.030**	0.151	0.163
6	Log earnings last month if positive (2016)									
	p-value	0.755	0.598	0.404	0.549	0.471	0.156	0.941	0.917	0.956
	sharpened q-value	0.323	0.597	0.481	0.427	0.640	0.316	0.625	0.913	0.929
6	Positive earnings (2016)									
	p-value	0.025**	0.061*	0.249	0.860	0.593	0.595	0.006***	0.048**	0.052*
	sharpened q-value	0.036**	0.114	0.352	0.600	0.710	0.710	0.025**	0.144	0.149
6	Total earnings last month (GHX) (2016)									
	p-value	0.486	0.735	0.680	0.267	0.777	0.104	0.069*	0.506	0.061*
	sharpened q-value	0.225	0.662	0.643	0.261	0.834	0.240	0.111	0.657	0.168
6	Total hours worked last month (2016)									
	p-value	0.064*	0.021**	0.836	0.744	0.189	0.334	0.032**	0.056*	0.273
	sharpened q-value	0.063*	0.048**	0.696	0.530	0.354	0.542	0.075*	0.159	0.465
6	Worked over 10 hours in the past month (2016)									
	p-value	0.015**	0.009***	0.473	0.545	0.473	0.072*	0.000***	0.006***	0.015**
	sharpened q-value	0.025**	0.029**	0.538	0.427	0.640	0.185	0.002***	0.032**	0.063*
6	Total hours worked last month if positive (2016)									
	p-value	0.693	0.219	0.592	0.545	0.123	0.612	0.940	0.756	0.705
	sharpened q-value	0.308	0.307	0.597	0.427	0.269	0.725	0.625	0.821	0.785
6	Earnings per hour if worked over 10 hours (2016)									
	p-value	0.025**	0.166	0.099*	0.061*	0.383	0.119	0.215	0.273	0.516
	sharpened q-value	0.036**	0.258	0.169	0.105	0.568	0.267	0.227	0.465	0.661
6	Total hours helping family in past week (2016)									
	p-value	0.083*	0.386	0.195	0.245	0.779	0.245	0.197	0.364	0.452
	sharpened q-value	0.070*	0.475	0.298	0.244	0.834	0.431	0.211	0.561	0.630
6	Enrolled in formal study/training (2016)									
	p-value	0.083*	0.016**	0.987	0.021**	0.014**	0.422	0.731	0.263	0.516
	sharpened q-value	0.070*	0.042**	0.835	0.056*	0.060*	0.589	0.528	0.460	0.661
6	Positive earnings or in school (2016)									
	p-value	0.007***	0.003***	0.442	0.279	0.088*	0.699	0.008***	0.016**	0.186
	sharpened q-value	0.014**	0.015**	0.521	0.267	0.212	0.785	0.034**	0.066*	0.352
6	Wage worker (2016)									
	p-value	0.018**	0.004***	0.711	0.979	0.139	0.121	0.002***	0.012**	0.078*
	sharpened q-value	0.029**	0.016**	0.654	0.640	0.300	0.269	0.013**	0.054*	0.198
6	Day or seasonal laborer (2016)									
	p-value	0.305	0.715	0.376	0.373	0.538	0.025**	0.039**	0.961	0.003***
	sharpened q-value	0.159	0.654	0.473	0.315	0.665	0.087*	0.080*	0.929	0.019**
6	Working for own or family business (2016)									
	p-value	0.589	0.549	0.841	0.368	0.417	0.583	0.963	0.899	0.849
	sharpened q-value	0.273	0.592	0.696	0.315	0.589	0.707	0.639	0.909	0.909
6	Actively searching for a job (2016)									
	p-value	0.002***	0.107	0.005***	0.000***	0.030**	0.002***	0.349	0.765	0.324
	sharpened q-value	0.007***	0.182	0.019**	0.001***	0.097*	0.012**	0.304	0.832	0.531

Table A8: P-values and Sharpened q-values cont.

		Combined			Academic Admits			Vocational Admits		
		All	Female	Male	All	Female	Male	All	Female	Male
Table	Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
6	If no earnings and no school: actively searching for a job (2016)									
	p-value	0.001***	0.001***	0.279	0.000***	0.000***	0.157	0.281	0.238	0.869
	sharpened q-value	0.004***	0.006***	0.396	0.001***	0.002***	0.316	0.267	0.424	0.909
6	If earnings: actively searching for a job (2016)									
	p-value	0.050*	0.839	0.006***	0.025**	0.969	0.004***	0.435	0.780	0.201
	sharpened q-value	0.055*	0.696	0.021**	0.062*	0.929	0.024**	0.355	0.834	0.368
6	Lowest daily wage willing to work for(GHX) (2013)									
	p-value	0.295	0.344	0.011**	0.565	0.820	0.236	0.397	0.291	0.022**
	sharpened q-value	0.157	0.456	0.031**	0.439	0.880	0.424	0.324	0.490	0.077*
6	Willing to move for wage employment (2013)									
	p-value	0.588	0.873	0.572	0.922	0.656	0.590	0.516	0.557	0.753
	sharpened q-value	0.273	0.701	0.597	0.625	0.745	0.710	0.415	0.684	0.821
6	Willing to do labor intensive work (2013)									
	p-value	0.706	0.410	0.672	0.870	0.195	0.234	0.723	0.985	0.644
	sharpened q-value	0.308	0.483	0.643	0.602	0.363	0.424	0.528	0.942	0.737
8	Satisfaction Index(1-very unsatisfied-->5-very satisfied)(2013/2016)									
	p-value	0.744	0.065*	0.176	0.451	0.867	0.379	0.287	0.011**	0.308
	sharpened q-value	0.323	0.117	0.266	0.362	0.909	0.568	0.270	0.052*	0.522
8	Satisfaction with finances(1-completely disagree --> 5-completely agree)(									
	p-value	0.107	0.004***	0.598	0.876	0.705	0.929	0.050*	0.001***	0.538
	sharpened q-value	0.081*	0.016**	0.597	0.602	0.785	0.929	0.092*	0.006***	0.665
8	Satisfied with life(1-very unsatisfied-->5-very satisfied)(2013)									
	p-value	0.237	0.681	0.207	0.055*	0.084*	0.317	0.943	0.361	0.421
	sharpened q-value	0.152	0.643	0.305	0.098*	0.210	0.526	0.625	0.559	0.589
8	Life as good as others(1-completely disagree-->5-completely agree)(2013)									
	p-value	0.932	0.167	0.208	0.907	0.453	0.354	0.815	0.236	0.398
	sharpened q-value	0.421	0.258	0.305	0.625	0.630	0.554	0.566	0.424	0.577
8	If employed: satisfaction with job(1-very unsatisfied-->5-very satisfied)(2									
	p-value	0.001***	0.213	0.000***	0.013**	0.474	0.007***	0.016**	0.318	0.018**
	sharpened q-value	0.004***	0.306	0.003***	0.043**	0.640	0.037**	0.049**	0.526	0.068*
8	Confident can get a better job(1-not sure possible --> 5-very confident)(									
	p-value	0.089*	0.140	0.326	0.121	0.106	0.510	0.360	0.536	0.493
	sharpened q-value	0.071*	0.225	0.438	0.151	0.244	0.659	0.311	0.665	0.653
8	Self-reported health status(1-very poor-->5- very good)(2013)									
	p-value	0.704	0.879	0.643	0.978	0.670	0.719	0.623	0.862	0.371
	sharpened q-value	0.308	0.701	0.641	0.640	0.767	0.797	0.466	0.909	0.562
8	Mental health index(1-depressed-->5-positive)(average over 7 questions)									
	p-value	0.981	0.574	0.629	0.727	0.980	0.629	0.757	0.479	0.805
	sharpened q-value	0.430	0.597	0.628	0.528	0.940	0.731	0.535	0.644	0.857
8	Feasibility of changing your life (1-no --> 4-certainly) (2013)									
	p-value	0.612	0.393	0.875	0.272	0.679	0.257	0.111	0.145	0.437
	sharpened q-value	0.274	0.479	0.701	0.263	0.774	0.454	0.144	0.304	0.619

Notes: Year of survey in parentheses. See Table 3 notes for description of columns; Cell row 1 shows the p-value for the sharpened form estimate of the treatment effect; cell row 2 shows the sharpened q values, which account for false discovery rate (Benjamini, Krieger, and Yekutieli, 2006; ***, **, * indicating significance at 1, 5 and 10%; all regressions control for region fixed effects, JHS finishing exam score (BECE) and missing JHS finishing exam scores;

Table A9: Comparing Results Across Control Specifications ☒

	Combined			Academic Major Admits			Vocational Major Admits		
	All	Female	Male	All	Female	Male	All	Female	Male
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Panel A. Secondary Education and Learning Outcomes									
Ever enrolled in SHS (2016)									
Light Controls on Treatment Eff	0.297	0.295	0.299	0.325	0.323	0.330	0.278	0.275	0.280
Standard error	(0.022)***	(0.031)***	(0.031)***	0.035)***	(0.049)***	(0.050)**	(0.028)***	(0.041)***	(0.040)***
p-value on equality of effects	*(5)=(6)=(8)=(9): .752*		*(2)=(3): .922*		*(3)=(4): .923*		*(4)=(7): .291*		*(8)=(9): .934*
Heavy Controls on Treatment E	0.294	0.292	0.296	0.326	0.324	0.331	0.272	0.270	0.273
Standard error	(0.022)***	(0.031)***	(0.031)***	0.035)***	(0.049)***	(0.050)**	(0.028)***	(0.041)***	(0.040)***
p-value on equality of effects	*(5)=(6)=(8)=(9): .672*		*(2)=(3): .937*		*(3)=(4): .916*		*(4)=(7): .227*		*(8)=(9): .954*
If enrolled, enrolled in academic major (2013)									
Light Controls on Treatment Eff	-0.043	-0.027	-0.056	0.075	0.110	0.044	-0.129	-0.136	-0.123
Standard error	(0.027)	(0.041)	(0.037)	(0.042)*	(0.063)*	(0.059)	(0.036)***	(0.055)**	(0.048)**
p-value on equality of effects	*(5)=(6)=(8)=(9): .003***		*(2)=(3): .613*		*(3)=(4): .447*		*(4)=(7): .000****		*(8)=(9): .862*
Heavy Controls on Treatment E	-0.043	-0.029	-0.054	0.077	0.109	0.047	-0.130	-0.140	-0.122
Standard error	(0.027)	(0.042)	(0.037)	(0.042)*	(0.063)*	(0.059)	(0.036)***	(0.055)**	(0.048)**
p-value on equality of effects	*(5)=(6)=(8)=(9): .002***		*(2)=(3): .665*		*(3)=(4): .477*		*(4)=(7): .000****		*(8)=(9): .812*
Completed SHS (2016)									
Light Controls on Treatment Eff	0.259	0.264	0.254	0.305	0.264	0.349	0.228	0.263	0.193
Standard error	(0.023)***	(0.033)***	(0.033)***	0.037)***	(0.052)***	(0.053)**	(0.030)***	(0.043)***	(0.043)***
p-value on equality of effects	*(5)=(6)=(8)=(9): .155*		*(2)=(3): .849*		*(3)=(4): .257*		*(4)=(7): .109*		*(8)=(9): .257*
Heavy Controls on Treatment E	0.257	0.264	0.250	0.306	0.268	0.349	0.224	0.262	0.187
Standard error	(0.023)***	(0.033)***	(0.033)***	0.037)***	(0.052)***	(0.053)**	(0.030)***	(0.044)***	(0.043)***
p-value on equality of effects	*(5)=(6)=(8)=(9): .130*		*(2)=(3): .770*		*(3)=(4): .278*		*(4)=(7): .089**		*(8)=(9): .224*
Average monthly earnings between Jan 2009 and July 2012 (2013)									
Light Controls on Treatment Eff	-8.383	-5.095	-11.673	-12.234	-8.190	-16.557	-5.707	-2.838	-8.431
Standard error	(1.664)***	(2.386)**	(2.388)***	2.627)***	(3.723)**	(3.775)**	(2.182)***	(3.139)	(3.108)***
p-value on equality of effects	*(5)=(6)=(8)=(9): .051**		*(2)=(3): .054**		*(3)=(4): .118*		*(4)=(7): .058**		*(8)=(9): .211*
Heavy Controls on Treatment E	-8.486	-5.196	-11.793	-12.298	-8.177	-16.729	-5.837	-2.993	-8.528
Standard error	(1.675)***	(2.400)**	(2.406)***	2.643)***	(3.734)**	(3.816)**	(2.196)***	(3.161)	(3.126)***
p-value on equality of effects	*(5)=(6)=(8)=(9): .054**		*(2)=(3): .055**		*(3)=(4): .113*		*(4)=(7): .062**		*(8)=(9): .219*
Years spent attending TVI (2016)									
Light Controls on Treatment Eff	-0.086	-0.051	-0.122	-0.106	-0.042	-0.172	-0.073	-0.057	-0.088
Standard error	(0.031)***	(0.045)	(0.045)***	(0.050)**	(0.070)	(0.071)**	(0.041)*	(0.059)	(0.058)
p-value on equality of effects	*(5)=(6)=(8)=(9): .558*		*(2)=(3): .269*		*(3)=(4): .197*		*(4)=(7): .603*		*(8)=(9): .711*
Heavy Controls on Treatment E	-0.085	-0.050	-0.120	-0.102	-0.041	-0.165	-0.073	-0.056	-0.090
Standard error	(0.031)***	(0.045)	(0.045)***	(0.050)**	(0.071)	(0.072)**	(0.041)*	(0.059)	(0.058)
p-value on equality of effects	*(5)=(6)=(8)=(9): .603*		*(2)=(3): .278*		*(3)=(4): .222*		*(4)=(7): .651*		*(8)=(9): .689*
Standardized score, Reading test (2013)									
Light Controls on Treatment Eff	0.127	0.160	0.094	0.116	0.137	0.095	0.135	0.176	0.094
Standard error	(0.045)***	(0.064)**	(0.064)	(0.071)	(0.100)	(0.102)	(0.059)**	(0.085)**	(0.084)
p-value on equality of effects	*(5)=(6)=(8)=(9): .898*		*(2)=(3): .475*		*(3)=(4): .770*		*(4)=(7): .843*		*(8)=(9): .494*
Heavy Controls on Treatment E	0.131	0.163	0.098	0.121	0.139	0.102	0.137	0.181	0.095
Standard error	(0.045)***	(0.065)**	(0.065)	(0.071)*	(0.101)	(0.103)	(0.059)**	(0.085)**	(0.084)
p-value on equality of effects	*(5)=(6)=(8)=(9): .898*		*(2)=(3): .482*		*(3)=(4): .801*		*(4)=(7): .860*		*(8)=(9): .481*
Standardized score, Math test (2013)									
Light Controls on Treatment Eff	0.117	0.191	0.043	0.112	0.215	0.006	0.120	0.174	0.068
Standard error	(0.047)**	(0.067)***	(0.067)	(0.074)	(0.105)**	(0.107)	(0.061)*	(0.089)*	(0.088)
p-value on equality of effects	*(5)=(6)=(8)=(9): .452*		*(2)=(3): .125*		*(3)=(4): .167*		*(4)=(7): .934*		*(8)=(9): .404*
Heavy Controls on Treatment E	0.115	0.193	0.037	0.114	0.219	0.004	0.116	0.175	0.059
Standard error	(0.047)**	(0.067)***	(0.068)	(0.074)	(0.105)**	(0.107)	(0.062)*	(0.089)**	(0.088)
p-value on equality of effects	*(5)=(6)=(8)=(9): .414*		*(2)=(3): .106*		*(3)=(4): .157*		*(4)=(7): .980*		*(8)=(9): .359*
Total standardized score (2013)									
Light Controls on Treatment Eff	0.143	0.209	0.078	0.135	0.213	0.054	0.149	0.206	0.094
Standard error	(0.046)***	(0.065)***	(0.065)	(0.072)*	(0.102)**	(0.104)	(0.060)**	(0.086)**	(0.085)
p-value on equality of effects	*(5)=(6)=(8)=(9): .564*		*(2)=(3): .162*		*(3)=(4): .280*		*(4)=(7): .874*		*(8)=(9): .360*
Heavy Controls on Treatment E	0.144	0.212	0.076	0.138	0.216	0.056	0.148	0.209	0.089
Standard error	(0.046)***	(0.065)***	(0.066)	(0.072)*	(0.102)**	(0.104)	(0.060)**	(0.086)**	(0.085)
p-value on equality of effects	*(5)=(6)=(8)=(9): .540*		*(2)=(3): .147*		*(3)=(4): .279*		*(4)=(7): .914*		*(8)=(9): .326*
National political knowledge standardized score (2013)									
Light Controls on Treatment Eff	0.091	0.123	0.059	0.042	0.096	-0.012	0.124	0.142	0.107
Standard error	(0.047)*	(0.068)*	(0.068)	(0.075)	(0.106)	(0.108)	(0.062)**	(0.089)	(0.089)
p-value on equality of effects	*(5)=(6)=(8)=(9): .739*		*(2)=(3): .510*		*(3)=(4): .482*		*(4)=(7): .404*		*(8)=(9): .782*
Heavy Controls on Treatment E	0.092	0.122	0.061	0.046	0.094	-0.003	0.123	0.142	0.104
Standard error	(0.047)*	(0.068)*	(0.068)	(0.075)	(0.106)	(0.108)	(0.062)**	(0.090)	(0.089)
p-value on equality of effects	*(5)=(6)=(8)=(9): .777*		*(2)=(3): .531*		*(3)=(4): .524*		*(4)=(7): .435*		*(8)=(9): .767*
International political knowledge standardized score (2013)									
Light Controls on Treatment Eff	0.061	0.028	0.095	0.070	0.018	0.122	0.056	0.034	0.077
Standard error	(0.043)	(0.061)	(0.061)	(0.068)	(0.096)	(0.097)	(0.056)	(0.081)	(0.080)
p-value on equality of effects	*(5)=(6)=(8)=(9): .866*		*(2)=(3): .442*		*(3)=(4): .451*		*(4)=(7): .875*		*(8)=(9): .714*
Heavy Controls on Treatment E	0.060	0.025	0.096	0.068	0.016	0.122	0.055	0.031	0.078
Standard error	(0.043)	(0.062)	(0.062)	(0.068)	(0.096)	(0.098)	(0.056)	(0.081)	(0.080)
p-value on equality of effects	*(5)=(6)=(8)=(9): .854*		*(2)=(3): .419*		*(3)=(4): .443*		*(4)=(7): .880*		*(8)=(9): .684*

Table A9 continues on next page

Table A9: Comparing Results Across Control Specifications cont.☒

	Combined			Academic Major Admits			Vocational Major Admits		
	All	Female	Male	All	Female	Male	All	Female	Male
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Knows how to use the internet (2015)									
Light Controls on Treatment Eff	0.065	0.100	0.028	0.082	0.134	0.032	0.053	0.077	0.028
Standard error	(0.022)***	(0.031)***	(0.032)	(0.035)**	(0.049)***	(0.050)	(0.029)*	(0.041)*	(0.041)
p-value on equality of effects	*(5)=(6)=(8)=(9): .354*	*(2)=(3): .111*			*(3)=(4): .150*		*(4)=(7): .525*	*(8)=(9): .408*	
Heavy Controls on Treatment E	0.067	0.103	0.030	0.085	0.136	0.035	0.054	0.079	0.028
Standard error	(0.022)***	(0.032)***	(0.032)	(0.035)**	(0.049)***	(0.051)	(0.029)*	(0.041)*	(0.041)
p-value on equality of effects	*(5)=(6)=(8)=(9): .350*	*(2)=(3): .107*			*(3)=(4): .157*		*(4)=(7): .504*	*(8)=(9): .386*	
Knows how to use the internet (2016)									
Light Controls on Treatment Eff	0.042	0.072	0.011	0.009	0.031	-0.015	0.064	0.101	0.029
Standard error	(0.021)**	(0.030)**	(0.030)	(0.034)	(0.048)	(0.048)	(0.028)**	(0.040)**	(0.039)
p-value on equality of effects	*(5)=(6)=(8)=(9): .295*	*(2)=(3): .161*			*(3)=(4): .497*		*(4)=(7): .206*	*(8)=(9): .201*	
Heavy Controls on Treatment E	0.044	0.074	0.013	0.011	0.033	-0.012	0.066	0.103	0.030
Standard error	(0.021)**	(0.030)**	(0.030)	(0.034)	(0.048)	(0.049)	(0.028)**	(0.040)**	(0.039)
p-value on equality of effects	*(5)=(6)=(8)=(9): .300*	*(2)=(3): .162*			*(3)=(4): .506*		*(4)=(7): .213*	*(8)=(9): .197*	
Belief in traditional medicine(0 low belief to 12 high belief)(2013)									
Light Controls on Treatment Eff	-0.139	-0.096	-0.182	-0.281	0.121	-0.689	-0.040	-0.253	0.167
Standard error	(0.112)	(0.160)	(0.160)	(0.176)	(0.250)	(0.253)**	(0.146)	(0.211)	(0.208)
p-value on equality of effects	*(5)=(6)=(8)=(9): .044***	*(2)=(3): .710*			*(3)=(4): .024***		*(4)=(7): .296*	*(8)=(9): .161*	
Heavy Controls on Treatment E	-0.147	-0.099	-0.196	-0.279	0.119	-0.691	-0.055	-0.257	0.140
Standard error	(0.112)	(0.161)	(0.161)	(0.177)	(0.250)	(0.255)**	(0.147)	(0.212)	(0.209)
p-value on equality of effects	*(5)=(6)=(8)=(9): .054**	*(2)=(3): .674*			*(3)=(4): .025***		*(4)=(7): .334*	*(8)=(9): .187*	
Panel B. Tertiary Education Outcomes									
Ever enrolled in tertiary education (2016)									
Light Controls on Treatment Eff	0.030	0.055	0.005	0.061	0.109	0.013	0.009	0.018	-0.001
Standard error	(0.015)**	(0.021)***	(0.021)	0.023)**	(0.033)***	(0.033)	(0.019)	(0.027)	(0.027)
p-value on equality of effects	*(5)=(6)=(8)=(9): .060**	*(2)=(3): .090**			*(3)=(4): .042***		*(4)=(7): .082**	*(8)=(9): .630*	
Heavy Controls on Treatment E	0.029	0.057	0.001	0.060	0.112	0.007	0.007	0.019	-0.004
Standard error	(0.015)**	(0.021)***	(0.021)	0.023)**	(0.033)***	(0.033)	(0.019)	(0.027)	(0.027)
p-value on equality of effects	*(5)=(6)=(8)=(9): .041**	*(2)=(3): .060**			*(3)=(4): .027***		*(4)=(7): .080**	*(8)=(9): .565*	
Currently enrolled in tertiary program (2016)									
Light Controls on Treatment Eff	0.028	0.049	0.006	0.062	0.091	0.034	0.004	0.020	-0.012
Standard error	(0.014)**	(0.020)**	(0.020)	0.022)**	(0.031)***	(0.031)	(0.018)	(0.026)	(0.026)
p-value on equality of effects	*(5)=(6)=(8)=(9): .083**	*(2)=(3): .126*			*(3)=(4): .204*		*(4)=(7): .041***	*(8)=(9): .376*	
Heavy Controls on Treatment E	0.026	0.051	0.002	0.061	0.093	0.028	0.003	0.021	-0.015
Standard error	(0.014)*	(0.020)***	(0.020)	0.022)**	(0.031)***	(0.031)	(0.018)	(0.026)	(0.025)
p-value on equality of effects	*(5)=(6)=(8)=(9): .061**	*(2)=(3): .082**			*(3)=(4): .140*		*(4)=(7): .041***	*(8)=(9): .328*	
University (2016)									
Light Controls on Treatment Eff	0.021	0.037	0.005	0.032	0.054	0.009	0.014	0.024	0.003
Standard error	(0.009)**	(0.013)***	(0.013)	(0.015)**	(0.021)***	(0.021)	(0.012)	(0.017)	(0.017)
p-value on equality of effects	*(5)=(6)=(8)=(9): .257*	*(2)=(3): .097**			*(3)=(4): .125*		*(4)=(7): .335*	*(8)=(9): .392*	
Heavy Controls on Treatment E	0.020	0.036	0.005	0.032	0.055	0.009	0.012	0.023	0.002
Standard error	(0.009)**	(0.013)***	(0.013)	(0.015)**	(0.021)***	(0.021)	(0.012)	(0.017)	(0.017)
p-value on equality of effects	*(5)=(6)=(8)=(9): .242*	*(2)=(3): .095**			*(3)=(4): .127*		*(4)=(7): .300*	*(8)=(9): .382*	
Teachers training (2016)									
Light Controls on Treatment Eff	0.005	0.005	0.004	0.020	0.015	0.025	-0.006	-0.002	-0.010
Standard error	(0.008)	(0.012)	(0.012)	(0.013)	(0.019)	(0.019)	(0.011)	(0.016)	(0.015)
p-value on equality of effects	*(5)=(6)=(8)=(9): .485*	*(2)=(3): .963*			*(3)=(4): .703*		*(4)=(7): .136*	*(8)=(9): .725*	
Heavy Controls on Treatment E	0.003	0.006	0.000	0.017	0.017	0.016	-0.006	-0.001	-0.010
Standard error	(0.008)	(0.012)	(0.012)	(0.013)	(0.019)	(0.019)	(0.011)	(0.016)	(0.015)
p-value on equality of effects	*(5)=(6)=(8)=(9): .605*	*(2)=(3): .736*			*(3)=(4): .996*		*(4)=(7): .191*	*(8)=(9): .683*	
Years spent attending tertiary education (2016)									
Light Controls on Treatment Eff	0.074	0.104	0.044	0.115	0.181	0.046	0.046	0.050	0.042
Standard error	(0.028)***	(0.040)***	(0.040)	0.044)**	(0.063)***	(0.063)	(0.036)	(0.052)	(0.052)
p-value on equality of effects	*(5)=(6)=(8)=(9): .298*	*(2)=(3): .293*			*(3)=(4): .132*		*(4)=(7): .229*	*(8)=(9): .919*	
Heavy Controls on Treatment E	0.069	0.106	0.032	0.107	0.187	0.023	0.043	0.049	0.037
Standard error	(0.028)**	(0.040)***	(0.040)	(0.044)**	(0.062)***	(0.063)	(0.036)	(0.052)	(0.051)
p-value on equality of effects	*(5)=(6)=(8)=(9): .204*	*(2)=(3): .192*			*(3)=(4): .067**		*(4)=(7): .261*	*(8)=(9): .872*	
Total years of education to date (2016)									
Light Controls on Treatment Eff	1.236	1.305	1.166	1.394	1.466	1.325	1.127	1.191	1.062
Standard error	(0.094)***	(0.134)***	(0.134)***	0.149)**	(0.211)***	(0.214)**	(0.122)***	(0.176)***	(0.174)***
p-value on equality of effects	*(5)=(6)=(8)=(9): .487*	*(2)=(3): .469*			*(3)=(4): .642*		*(4)=(7): .169*	*(8)=(9): .605*	
Heavy Controls on Treatment E	1.220	1.300	1.141	1.394	1.479	1.311	1.101	1.173	1.030
Standard error	(0.094)***	(0.134)***	(0.134)***	0.148)**	(0.211)***	(0.214)**	(0.122)***	(0.176)***	(0.174)***
p-value on equality of effects	*(5)=(6)=(8)=(9): .396*	*(2)=(3): .407*			*(3)=(4): .578*		*(4)=(7): .131*	*(8)=(9): .568*	
Plans to continue to tertiary (2013)									
Light Controls on Treatment Eff	0.241	0.276	0.206	0.258	0.275	0.240	0.230	0.277	0.184
Standard error	(0.024)***	(0.034)***	(0.034)***	0.038)**	(0.053)***	(0.054)**	(0.031)***	(0.045)***	(0.045)***
p-value on equality of effects	*(5)=(6)=(8)=(9): .448*	*(2)=(3): .155*			*(3)=(4): .653*		*(4)=(7): .574*	*(8)=(9): .145*	
Heavy Controls on Treatment E	0.241	0.277	0.205	0.263	0.276	0.249	0.226	0.277	0.176
Standard error	(0.024)***	(0.034)***	(0.034)***	0.038)**	(0.053)***	(0.054)**	(0.031)***	(0.045)***	(0.045)***
p-value on equality of effects	*(5)=(6)=(8)=(9): .363*	*(2)=(3): .145*			*(3)=(4): .720*		*(4)=(7): .449*	*(8)=(9): .114*	

Table A9 cont. on next page

Table A9: Comparing Results Across Control Specifications cont.☒

	Combined			Academic Major Admits			Vocational Major Admits		
	All	Female	Male	All	Female	Male	All	Female	Male
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Panel A. Tertiary Education Outcomes cont.									
Sat for WASSCE exam (2015)									
Light Controls on Treatment Eff	0.273	0.285	0.260	0.300	0.288	0.314	0.254	0.283	0.224
Standard error	(0.023)***	(0.033)***	(0.034)***	0.037)***	(0.053)***	(0.053)**	(0.031)***	(0.044)***	(0.044)***
p-value on equality of effects	*(5)=(6)=(8)=(9): .584*	*(2)=(3): .593*			*(3)=(4): .735*		*(4)=(7): .340*	*(8)=(9): .345*	
Heavy Controls on Treatment E	0.271	0.286	0.256	0.302	0.292	0.314	0.250	0.281	0.218
Standard error	(0.023)***	(0.034)***	(0.034)***	0.037)***	(0.053)***	(0.054)**	(0.031)***	(0.044)***	(0.044)***
p-value on equality of effects	*(5)=(6)=(8)=(9): .513*	*(2)=(3): .531*			*(3)=(4): .776*		*(4)=(7): .280*	*(8)=(9): .311*	
Plans to apply to tertiary (2015)									
Light Controls on Treatment Eff	0.161	0.168	0.153	0.164	0.133	0.199	0.158	0.193	0.123
Standard error	(0.025)***	(0.035)***	(0.035)***	0.039)***	(0.055)**	(0.057)**	(0.032)***	(0.046)***	(0.046)***
p-value on equality of effects	*(5)=(6)=(8)=(9): .608*	*(2)=(3): .765*			*(3)=(4): .403*		*(4)=(7): .902*	*(8)=(9): .291*	
Heavy Controls on Treatment E	0.162	0.171	0.153	0.162	0.133	0.195	0.162	0.197	0.126
Standard error	(0.025)***	(0.035)***	(0.035)***	0.039)***	(0.055)**	(0.056)**	(0.032)***	(0.046)***	(0.046)***
p-value on equality of effects	*(5)=(6)=(8)=(9): .620*	*(2)=(3): .720*			*(3)=(4): .436*		*(4)=(7): .996*	*(8)=(9): .277*	
Applied for tertiary education (2015)									
Light Controls on Treatment Eff	0.080	0.123	0.035	0.099	0.158	0.037	0.067	0.099	0.035
Standard error	(0.019)***	(0.027)***	(0.027)	0.030)***	(0.042)***	(0.043)	(0.025)***	(0.035)***	(0.035)
p-value on equality of effects	*(5)=(6)=(8)=(9): .099*	*(2)=(3): .023**			*(3)=(4): .047**		*(4)=(7): .413*	*(8)=(9): .207*	
Heavy Controls on Treatment E	0.081	0.121	0.041	0.096	0.154	0.038	0.071	0.098	0.044
Standard error	(0.019)***	(0.027)***	(0.027)	0.030)***	(0.042)***	(0.043)	(0.025)***	(0.035)***	(0.035)
p-value on equality of effects	*(5)=(6)=(8)=(9): .158*	*(2)=(3): .039**			*(3)=(4): .057**		*(4)=(7): .528*	*(8)=(9): .288*	
Admitted to a tertiary program (2015)									
Light Controls on Treatment Eff	0.029	0.057	0.000	0.032	0.073	-0.012	0.027	0.046	0.008
Standard error	(0.014)**	(0.020)***	(0.020)	(0.023)	(0.032)**	(0.033)	(0.019)	(0.027)*	(0.027)
p-value on equality of effects	*(5)=(6)=(8)=(9): .221*	*(2)=(3): .052**			*(3)=(4): .067**		*(4)=(7): .861*	*(8)=(9): .317*	
Heavy Controls on Treatment E	0.030	0.057	0.004	0.033	0.071	-0.007	0.028	0.047	0.010
Standard error	(0.014)**	(0.020)***	(0.020)	(0.023)	(0.032)**	(0.032)	(0.019)	(0.027)*	(0.026)
p-value on equality of effects	*(5)=(6)=(8)=(9): .283*	*(2)=(3): .069**			*(3)=(4): .091**		*(4)=(7): .880*	*(8)=(9): .337*	
Panel C. Marriage, Reproductive Health and Health Behaviors									
Ever lived with partner(2016)									
Light Controls on Treatment Eff	-0.055	-0.093	-0.018	-0.053	-0.095	-0.011	-0.057	-0.092	-0.023
Standard error	(0.020)***	(0.028)***	(0.028)	(0.032)*	(0.045)**	(0.045)	(0.026)**	(0.037)**	(0.037)
p-value on equality of effects	*(5)=(6)=(8)=(9): .327*	*(2)=(3): .063**			*(3)=(4): .193*		*(4)=(7): .914*	*(8)=(9): .187*	
Heavy Controls on Treatment E	-0.057	-0.095	-0.020	-0.054	-0.095	-0.014	-0.060	-0.095	-0.025
Standard error	(0.020)***	(0.028)***	(0.028)	(0.032)*	(0.045)**	(0.045)	(0.026)**	(0.037)**	(0.037)
p-value on equality of effects	*(5)=(6)=(8)=(9): .341*	*(2)=(3): .067**			*(3)=(4): .209*		*(4)=(7): .892*	*(8)=(9): .188*	
Ever pregnant/had a pregnant partner (2016)									
Light Controls on Treatment Eff	-0.070	-0.118	-0.021	-0.078	-0.108	-0.049	-0.064	-0.125	-0.003
Standard error	(0.022)***	(0.032)***	(0.032)	(0.035)**	(0.050)**	(0.051)	(0.029)**	(0.042)***	(0.041)
p-value on equality of effects	*(5)=(6)=(8)=(9): .167*	*(2)=(3): .033**			*(3)=(4): .411*		*(4)=(7): .757*	*(8)=(9): .039**	
Heavy Controls on Treatment E	-0.072	-0.119	-0.024	-0.077	-0.105	-0.050	-0.068	-0.128	-0.007
Standard error	(0.022)***	(0.032)***	(0.032)	(0.035)**	(0.050)**	(0.051)	(0.029)**	(0.042)***	(0.041)
p-value on equality of effects	*(5)=(6)=(8)=(9): .182*	*(2)=(3): .036**			*(3)=(4): .442*		*(4)=(7): .850*	*(8)=(9): .040**	
Number of children ever had (2016)									
Light Controls on Treatment Eff	-0.127	-0.226	-0.027	-0.138	-0.184	-0.089	-0.120	-0.255	0.014
Standard error	(0.038)***	(0.054)***	(0.055)	(0.060)**	(0.085)**	(0.087)	(0.050)**	(0.071)***	(0.070)
p-value on equality of effects	*(5)=(6)=(8)=(9): .052*	*(2)=(3): .010**			*(3)=(4): .443*		*(4)=(7): .814*	*(8)=(9): .007****	
Heavy Controls on Treatment E	-0.127	-0.224	-0.030	-0.133	-0.178	-0.086	-0.124	-0.256	0.007
Standard error	(0.038)***	(0.054)***	(0.055)	(0.060)**	(0.086)**	(0.087)	(0.049)**	(0.071)***	(0.070)
p-value on equality of effects	*(5)=(6)=(8)=(9): .060*	*(2)=(3): .012**			*(3)=(4): .458*		*(4)=(7): .903*	*(8)=(9): .009****	
Had unwanted first pregnancy (full sample) (2016)									
Light Controls on Treatment Eff	-0.070	-0.121	-0.021	-0.060	-0.083	-0.036	-0.077	-0.147	-0.011
Standard error	(0.022)***	(0.032)***	(0.032)	(0.035)*	(0.050)*	(0.051)	(0.029)***	(0.042)***	(0.041)
p-value on equality of effects	*(5)=(6)=(8)=(9): .119*	*(2)=(3): .028**			*(3)=(4): .513*		*(4)=(7): .712*	*(8)=(9): .021**	
Heavy Controls on Treatment E	-0.073	-0.123	-0.024	-0.059	-0.081	-0.037	-0.082	-0.152	-0.015
Standard error	(0.022)***	(0.032)***	(0.032)	(0.035)*	(0.050)	(0.051)	(0.029)***	(0.042)***	(0.041)
p-value on equality of effects	*(5)=(6)=(8)=(9): .113*	*(2)=(3): .029**			*(3)=(4): .546*		*(4)=(7): .615*	*(8)=(9): .020**	
Desired fertility: # of children by age 50 (2013)									
Light Controls on Treatment Eff	-0.054	-0.045	-0.063	-0.154	-0.179	-0.129	0.016	0.052	-0.019
Standard error	(0.053)	(0.075)	(0.076)	(0.083)*	(0.118)	(0.120)	(0.069)	(0.100)	(0.098)
p-value on equality of effects	*(5)=(6)=(8)=(9): .426*	*(2)=(3): .872*			*(3)=(4): .769*		*(4)=(7): .119*	*(8)=(9): .619*	
Heavy Controls on Treatment E	-0.046	-0.038	-0.055	-0.145	-0.178	-0.114	0.022	0.063	-0.016
Standard error	(0.052)	(0.075)	(0.075)	(0.083)*	(0.117)	(0.119)	(0.069)	(0.099)	(0.098)
p-value on equality of effects	*(5)=(6)=(8)=(9): .409*	*(2)=(3): .875*			*(3)=(4): .703*		*(4)=(7): .121*	*(8)=(9): .576*	
Index of risky sexual behavior(safe-->risky)(2013)									
Light Controls on Treatment Eff	-0.049	-0.011	-0.088	-0.051	-0.012	-0.090	-0.048	-0.010	-0.086
Standard error	(0.029)*	(0.042)	(0.042)**	(0.046)	(0.065)	(0.067)	(0.038)	(0.055)	(0.055)
p-value on equality of effects	*(5)=(6)=(8)=(9): .655*	*(2)=(3): .201*			*(3)=(4): .409*		*(4)=(7): .971*	*(8)=(9): .336*	
Heavy Controls on Treatment E	-0.050	-0.012	-0.088	-0.051	-0.011	-0.091	-0.050	-0.014	-0.085
Standard error	(0.029)*	(0.042)	(0.042)**	(0.046)	(0.065)	(0.066)	(0.038)	(0.055)	(0.054)
p-value on equality of effects	*(5)=(6)=(8)=(9): .667*	*(2)=(3): .209*			*(3)=(4): .395*		*(4)=(7): .985*	*(8)=(9): .362*	

Table A9 continues on next page

Table A9: Comparing Results Across Control Specifications cont.☒

	Combined			Academic Major Admits			Vocational Major Admits		
	All	Female	Male	All	Female	Male	All	Female	Male
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Index of STI risk exposure (2013)									
Light Controls on Treatment Eff	-0.069	-0.050	-0.087	-0.094	-0.086	-0.102	-0.051	-0.026	-0.077
Standard error	(0.028)**	(0.041)	(0.041)**	(0.045)**	(0.063)	(0.065)	(0.037)	(0.053)	(0.053)
p-value on equality of effects	*(5)=(6)=(8)=(9): .803*	*(2)=(3): .525*			*(3)=(4): .857*		*(4)=(7): .460*	*(8)=(9): .503*	
Heavy Controls on Treatment E	-0.071	-0.056	-0.086	-0.095	-0.089	-0.100	-0.054	-0.034	-0.076
Standard error	(0.028)**	(0.040)	(0.040)**	(0.044)**	(0.063)	(0.064)	(0.037)	(0.053)	(0.053)
p-value on equality of effects	*(5)=(6)=(8)=(9): .854*	*(2)=(3): .606*			*(3)=(4): .902*		*(4)=(7): .480*	*(8)=(9): .580*	
Preventative health behavior (3 questions) (2013)									
Light Controls on Treatment Eff	0.118	0.121	0.116	0.187	0.210	0.165	0.071	0.055	0.085
Standard error	(0.039)***	(0.055)**	(0.055)**	0.061)***	(0.086)**	(0.088)*	(0.051)	(0.073)	(0.072)
p-value on equality of effects	*(5)=(6)=(8)=(9): .496*	*(2)=(3): .956*			*(3)=(4): .715*		*(4)=(7): .147*	*(8)=(9): .774*	
Heavy Controls on Treatment E	0.118	0.118	0.118	0.185	0.211	0.162	0.071	0.050	0.090
Standard error	(0.038)***	(0.055)**	(0.055)**	0.061)***	(0.086)**	(0.087)*	(0.050)	(0.073)	(0.072)
p-value on equality of effects	*(5)=(6)=(8)=(9): .486*	*(2)=(3): .999*			*(3)=(4): .689*		*(4)=(7): .152*	*(8)=(9): .702*	
Panel D. Primary Occupation and Total Earnings									
Inv. hyperbolic sine earnings (2016)									
Light Controls on Treatment Eff	0.305	0.425	0.185	0.022	0.308	-0.281	0.499	0.510	0.491
Standard error	(0.141)**	(0.203)**	(0.203)	(0.224)	(0.318)	(0.324)	(0.185)***	(0.266)*	(0.263)*
p-value on equality of effects	*(5)=(6)=(8)=(9): .226*	*(2)=(3): .409*			*(3)=(4): .199*		*(4)=(7): .104*	*(8)=(9): .959*	
Heavy Controls on Treatment E	0.293	0.417	0.169	-0.008	0.299	-0.329	0.498	0.502	0.497
Standard error	(0.141)**	(0.202)**	(0.202)	(0.224)	(0.318)	(0.322)	(0.184)***	(0.265)*	(0.262)*
p-value on equality of effects	*(5)=(6)=(8)=(9): .176*	*(2)=(3): .392*			*(3)=(4): .169*		*(4)=(7): .083**	*(8)=(9): .991*	
Positive earnings (2016)									
Light Controls on Treatment Eff	0.055	0.066	0.044	0.007	0.041	-0.029	0.088	0.085	0.092
Standard error	(0.024)**	(0.035)*	(0.035)	(0.038)	(0.054)	(0.056)	(0.032)***	(0.045)*	(0.045)**
p-value on equality of effects	*(5)=(6)=(8)=(9): .324*	*(2)=(3): .654*			*(3)=(4): .373*		*(4)=(7): .104*	*(8)=(9): .906*	
Heavy Controls on Treatment E	0.053	0.065	0.040	0.002	0.040	-0.037	0.087	0.083	0.091
Standard error	(0.024)**	(0.034)*	(0.035)	(0.038)	(0.054)	(0.055)	(0.032)***	(0.045)*	(0.045)**
p-value on equality of effects	*(5)=(6)=(8)=(9): .275*	*(2)=(3): .615*			*(3)=(4): .328*		*(4)=(7): .090**	*(8)=(9): .901*	
Total earnings last month (GHX) (2016)									
Light Controls on Treatment Eff	7.731	8.161	7.301	-17.794	0.076	-36.834	25.168	14.108	36.315
Standard error	(10.805)	(15.504)	(15.506)	(17.136)	(24.289)	(24.702)	(14.114)*	(20.331)	(20.054)*
p-value on equality of effects	*(5)=(6)=(8)=(9): .141*	*(2)=(3): .969*			*(3)=(4): .291*		*(4)=(7): .055**	*(8)=(9): .441*	
Heavy Controls on Treatment E	7.225	7.501	6.950	-20.249	-0.506	-41.054	25.949	13.324	38.607
Standard error	(10.780)	(15.468)	(15.463)	(17.110)	(24.293)	(24.602)*	(14.074)*	(20.259)	(20.004)*
p-value on equality of effects	*(5)=(6)=(8)=(9): .091**	*(2)=(3): .980*			*(3)=(4): .245*		*(4)=(7): .038***	*(8)=(9): .379*	
Total hours worked last month (2016)									
Light Controls on Treatment Eff	9.582	18.784	0.267	2.927	17.829	-12.794	14.134	19.498	8.904
Standard error	(5.407)*	(7.725)**	(7.774)	(8.581)	(12.116)	(12.407)	(7.072)**	(10.147)*	(10.083)
p-value on equality of effects	*(5)=(6)=(8)=(9): .202*	*(2)=(3): .095**			*(3)=(4): .080**		*(4)=(7): .318*	*(8)=(9): .464*	
Heavy Controls on Treatment E	9.130	18.046	0.116	1.726	17.193	-14.413	14.182	18.674	9.773
Standard error	(5.408)*	(7.727)**	(7.771)	(8.590)	(12.151)	(12.391)	(7.070)**	(10.139)*	(10.084)
p-value on equality of effects	*(5)=(6)=(8)=(9): .180*	*(2)=(3): .106*			*(3)=(4): .071**		*(4)=(7): .267*	*(8)=(9): .538*	
Worked over 10 hours in the past month (2016)									
Light Controls on Treatment Eff	0.061	0.087	0.033	-0.019	0.052	-0.095	0.115	0.113	0.118
Standard error	(0.024)**	(0.035)**	(0.035)	(0.039)	(0.055)	(0.056)*	(0.032)***	(0.046)**	(0.046)***
p-value on equality of effects	*(5)=(6)=(8)=(9): .014**	*(2)=(3): .279*			*(3)=(4): .064**		*(4)=(7): .007****	*(8)=(9): .946*	
Heavy Controls on Treatment E	0.058	0.087	0.029	-0.024	0.050	-0.102	0.115	0.113	0.116
Standard error	(0.024)**	(0.035)**	(0.035)	(0.039)	(0.055)	(0.056)*	(0.032)***	(0.045)**	(0.045)**
p-value on equality of effects	*(5)=(6)=(8)=(9): .010**	*(2)=(3): .249*			*(3)=(4): .054**		*(4)=(7): .006****	*(8)=(9): .960*	
Earnings per hour if worked over 10 hours (2016)									
Light Controls on Treatment Eff	-0.410	-0.228	-0.541	-0.593	-0.286	-0.805	-0.304	-0.212	-0.373
Standard error	(0.253)	(0.396)	(0.335)	(0.421)	(0.643)	(0.561)	(0.319)	(0.505)	(0.419)
p-value on equality of effects	*(5)=(6)=(8)=(9): .874*	*(2)=(3): .549*			*(3)=(4): .545*		*(4)=(7): .586*	*(8)=(9): .807*	
Heavy Controls on Treatment E	-0.414	-0.237	-0.541	-0.605	-0.299	-0.812	-0.305	-0.219	-0.370
Standard error	(0.252)	(0.395)	(0.333)	(0.420)	(0.642)	(0.559)	(0.317)	(0.503)	(0.417)
p-value on equality of effects	*(5)=(6)=(8)=(9): .872*	*(2)=(3): .559*			*(3)=(4): .548*		*(4)=(7): .570*	*(8)=(9): .819*	
Total hours helping family in past week (2016)									
Light Controls on Treatment Eff	-2.535	-2.413	-2.650	-1.285	0.584	-3.330	-3.390	-4.880	-2.225
Standard error	(2.176)	(3.183)	(3.097)	(3.451)	(4.808)	(5.153)	(2.846)	(4.324)	(3.878)
p-value on equality of effects	*(5)=(6)=(8)=(9): .865*	*(2)=(3): .958*			*(3)=(4): .584*		*(4)=(7): .640*	*(8)=(9): .651*	
Heavy Controls on Treatment E	-2.167	-2.151	-2.183	-0.903	1.047	-3.071	-3.035	-4.832	-1.632
Standard error	(2.163)	(3.164)	(3.073)	(3.437)	(4.775)	(5.150)	(2.836)	(4.321)	(3.848)
p-value on equality of effects	*(5)=(6)=(8)=(9): .834*	*(2)=(3): .994*			*(3)=(4): .563*		*(4)=(7): .636*	*(8)=(9): .584*	
Enrolled in formal study/training (2016)									
Light Controls on Treatment Eff	0.022	0.057	-0.012	0.056	0.099	0.013	-0.001	0.028	-0.029
Standard error	(0.014)	(0.021)***	(0.021)	(0.023)**	(0.032)***	(0.033)	(0.019)	(0.027)	(0.027)
p-value on equality of effects	*(5)=(6)=(8)=(9): .025**	*(2)=(3): .018**			*(3)=(4): .065**		*(4)=(7): .057**	*(8)=(9): .141*	
Heavy Controls on Treatment E	0.024	0.055	-0.008	0.058	0.096	0.019	0.001	0.027	-0.026
Standard error	(0.014)	(0.021)***	(0.021)	(0.023)**	(0.033)***	(0.033)	(0.019)	(0.027)	(0.027)
p-value on equality of effects	*(5)=(6)=(8)=(9): .040**	*(2)=(3): .032***			*(3)=(4): .100*		*(4)=(7): .057**	*(8)=(9): .171*	
Positive earnings or in school (2016)									
Light Controls on Treatment Eff	0.061	0.101	0.020	0.044	0.112	-0.027	0.072	0.094	0.051
Standard error	(0.023)***	(0.033)***	(0.033)	(0.037)	(0.052)**	(0.053)	(0.030)**	(0.044)**	(0.043)
p-value on equality of effects	*(5)=(6)=(8)=(9): .238*	*(2)=(3): .089**			*(3)=(4): .066**		*(4)=(7): .561*	*(8)=(9): .489*	
Heavy Controls on Treatment E	0.060	0.099	0.021	0.041	0.108	-0.028	0.072	0.092	0.053
Standard error	(0.023)***	(0.033)***	(0.033)	(0.037)	(0.052)**	(0.053)	(0.030)**	(0.044)**	(0.043)
p-value on equality of effects	*(5)=(6)=(8)=(9): .250*	*(2)=(3): .102*			*(3)=(4): .070**		*(4)=(7): .520*	*(8)=(9): .526*	

Table A9: Comparing Results Across Control Specifications cont.☒

	Combined			Academic Major Admits			Vocational Major Admits		
	All	Female	Male	All	Female	Male	All	Female	Male
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Wage worker (2016)									
Light Controls on Treatment Eff	0.051	0.098	0.004	0.002	0.085	-0.085	0.084	0.107	0.062
Standard error	(0.022)**	(0.031)***	(0.031)	(0.035)	(0.049)*	(0.050)*	(0.029)***	(0.041)***	(0.041)
p-value on equality of effects	*(5)=(6)=(8)=(9): .022** (2)=(3): .037***				*(3)=(4): .017***		*(4)=(7): .068**	*(8)=(9): .443*	
Heavy Controls on Treatment E	0.051	0.096	0.006	-0.001	0.082	-0.087	0.087	0.106	0.067
Standard error	(0.022)**	(0.031)***	(0.031)	(0.035)	(0.049)*	(0.050)*	(0.029)***	(0.041)***	(0.040)*
p-value on equality of effects	*(5)=(6)=(8)=(9): .019** (2)=(3): .043***				*(3)=(4): .017***		*(4)=(7): .053**	*(8)=(9): .499*	
Day or seasonal laborer (2016)									
Light Controls on Treatment Eff	0.020	0.010	0.029	-0.027	0.022	-0.080	0.052	0.002	0.101
Standard error	(0.017)	(0.024)	(0.024)	(0.026)	(0.037)	(0.038)**	(0.022)**	(0.031)	(0.031)***
p-value on equality of effects	*(5)=(6)=(8)=(9): .003*** (2)=(3): .584*				*(3)=(4): .056**		*(4)=(7): .021***	*(8)=(9): .026***	
Heavy Controls on Treatment E	0.018	0.010	0.026	-0.028	0.023	-0.082	0.050	0.002	0.097
Standard error	(0.017)	(0.024)	(0.024)	(0.026)	(0.037)	(0.038)**	(0.022)**	(0.031)	(0.031)***
p-value on equality of effects	*(5)=(6)=(8)=(9): .003*** (2)=(3): .646*				*(3)=(4): .049***		*(4)=(7): .023***	*(8)=(9): .030***	
If no earnings and no school: actively searching for a job (2016)									
Light Controls on Treatment Eff	0.118	0.161	0.040	0.196	0.243	0.125	0.062	0.103	-0.019
Standard error	(0.044)***	(0.055)***	(0.074)	0.067)**	(0.085)***	(0.112)	(0.057)	(0.071)	(0.101)
p-value on equality of effects	*(5)=(6)=(8)=(9): .249 (2)=(3): .196*				*(3)=(4): .404*		*(4)=(7): .128*	*(8)=(9): .325*	
Heavy Controls on Treatment E	0.118	0.164	0.033	0.195	0.241	0.126	0.061	0.109	-0.034
Standard error	(0.044)***	(0.054)***	(0.074)	0.067)**	(0.085)***	(0.112)	(0.057)	(0.070)	(0.100)
p-value on equality of effects	*(5)=(6)=(8)=(9): .214 (2)=(3): .160*				*(3)=(4): .418*		*(4)=(7): .126*	*(8)=(9): .243*	
If earnings: actively searching for a job (2016)									
Light Controls on Treatment Eff	0.066	0.006	0.107	0.110	-0.013	0.197	0.039	0.017	0.055
Standard error	(0.031)**	(0.049)	(0.040)***	(0.051)**	(0.079)	(0.067)**	(0.039)	(0.062)	(0.051)
p-value on equality of effects	*(5)=(6)=(8)=(9): .140 (2)=(3): .115*				*(3)=(4): .044***		*(4)=(7): .269*	*(8)=(9): .647*	
Heavy Controls on Treatment E	0.066	0.009	0.105	0.112	-0.012	0.200	0.038	0.022	0.050
Standard error	(0.031)**	(0.049)	(0.040)***	(0.051)**	(0.079)	(0.067)**	(0.039)	(0.062)	(0.051)
p-value on equality of effects	*(5)=(6)=(8)=(9): .134 (2)=(3): .134*				*(3)=(4): .042***		*(4)=(7): .249*	*(8)=(9): .730*	
Lowest daily wage willing to work for(GHX) (2013)									
Light Controls on Treatment Eff	-0.737	0.816	-2.284	-0.698	0.164	-1.608	-0.764	1.287	-2.749
Standard error	(0.574)	(0.825)	(0.823)***	(0.910)	(1.291)	(1.307)	(0.753)	(1.085)	(1.070)**
p-value on equality of effects	*(5)=(6)=(8)=(9): .051* (2)=(3): .008****				*(3)=(4): .339*		*(4)=(7): .955*	*(8)=(9): .009****	
Heavy Controls on Treatment E	-0.586	0.796	-1.958	-0.543	0.108	-1.236	-0.616	1.289	-2.463
Standard error	(0.574)	(0.825)	(0.821)**	(0.910)	(1.296)	(1.301)	(0.753)	(1.084)	(1.071)**
p-value on equality of effects	*(5)=(6)=(8)=(9): .091* (2)=(3): .019***				*(3)=(4): .468*		*(4)=(7): .950*	*(8)=(9): .015***	
Satisfaction Index(1-very unsatisfied-->5-very satisfied)(2013/2016)									
Light Controls on Treatment Eff	0.015	0.099	-0.069	-0.047	-0.028	-0.068	0.058	0.190	-0.071
Standard error	(0.040)	(0.058)*	(0.058)	(0.064)	(0.090)	(0.092)	(0.053)	(0.076)**	(0.075)
p-value on equality of effects	*(5)=(6)=(8)=(9): .058* (2)=(3): .043***				*(3)=(4): .759*		*(4)=(7): .209*	*(8)=(9): .016***	
Heavy Controls on Treatment E	0.015	0.096	-0.067	-0.050	-0.029	-0.073	0.060	0.186	-0.064
Standard error	(0.040)	(0.057)*	(0.057)	(0.063)	(0.090)	(0.091)	(0.053)	(0.076)**	(0.075)
p-value on equality of effects	*(5)=(6)=(8)=(9): .064* (2)=(3): .047***				*(3)=(4): .730*		*(4)=(7): .186*	*(8)=(9): .020***	
Satisfaction with finances(1-completely disagree --> 5-completely agree)(2013)									
Light Controls on Treatment Eff	0.084	0.226	-0.059	0.022	0.049	-0.005	0.127	0.353	-0.094
Standard error	(0.057)	(0.082)***	(0.082)	(0.091)	(0.128)	(0.131)	(0.075)*	(0.108)***	(0.107)
p-value on equality of effects	*(5)=(6)=(8)=(9): .025** (2)=(3): .015***				*(3)=(4): .770*		*(4)=(7): .378*	*(8)=(9): .003****	
Heavy Controls on Treatment E	0.085	0.221	-0.052	0.020	0.047	-0.007	0.130	0.345	-0.082
Standard error	(0.057)	(0.082)***	(0.082)	(0.090)	(0.128)	(0.130)	(0.075)*	(0.107)***	(0.106)
p-value on equality of effects	*(5)=(6)=(8)=(9): .033** (2)=(3): .020***				*(3)=(4): .768*		*(4)=(7): .352*	*(8)=(9): .005****	
Satisfied with life(1-very unsatisfied-->5-very satisfied)(2013)									
Light Controls on Treatment Eff	-0.052	-0.041	-0.063	-0.158	-0.235	-0.080	0.021	0.100	-0.054
Standard error	(0.052)	(0.075)	(0.075)	(0.082)*	(0.116)**	(0.119)	(0.068)	(0.098)	(0.097)
p-value on equality of effects	*(5)=(6)=(8)=(9): .184 (2)=(3): .836*				*(3)=(4): .356*		*(4)=(7): .097**	*(8)=(9): .274*	
Heavy Controls on Treatment E	-0.056	-0.047	-0.065	-0.166	-0.237	-0.098	0.021	0.090	-0.045
Standard error	(0.052)	(0.074)	(0.074)	(0.082)**	(0.116)**	(0.118)	(0.068)	(0.098)	(0.097)
p-value on equality of effects	*(5)=(6)=(8)=(9): .192 (2)=(3): .864*				*(3)=(4): .406*		*(4)=(7): .081**	*(8)=(9): .334*	
If employed: satisfaction with job(1-very unsatisfied-->5-very satisfied)(2016)									
Light Controls on Treatment Eff	-0.271	-0.204	-0.320	-0.267	-0.272	-0.264	-0.273	-0.163	-0.354
Standard error	(0.084)***	(0.131)	(0.112)***	(0.137)*	(0.214)	(0.183)	(0.106)**	(0.167)	(0.142)**
p-value on equality of effects	*(5)=(6)=(8)=(9): .863 (2)=(3): .507*				*(3)=(4): .978*		*(4)=(7): .973*	*(8)=(9): .390*	
Heavy Controls on Treatment E	-0.274	-0.216	-0.317	-0.270	-0.272	-0.269	-0.277	-0.182	-0.346
Standard error	(0.083)***	(0.130)*	(0.111)***	(0.137)**	(0.213)	(0.182)	(0.106)***	(0.166)	(0.141)**
p-value on equality of effects	*(5)=(6)=(8)=(9): .907 (2)=(3): .560*				*(3)=(4): .991*		*(4)=(7): .970*	*(8)=(9): .457*	

Notes: Year of survey in parentheses. Refer Table 2 for meaning of columns. Light Controls has controls for district, year student took the BECE, gender, initial major, BECE score and whether BECE score is missing. Heavy Controls has the controls in Light Controls and a control for the highest level of education of household head. Standard errors in parentheses with ***, **, * indicating significance at 1, 5 and 10%. 1996 observations in 2016 survey. 1,984 observations in 2013 survey.

Table A10: Outcomes for Bottom Half of JHS Exam Scores

	Combined			Academic Major Admits			Vocational Major Admits		
	All	Female	Male	All	Female	Male	All	Female	Male
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Total standardized score (2013)									
Treatment effect	0.049	0.036	0.091	0.076	0.046	0.117	0.035	0.057	0.079
Standard error	(0.076)	(0.101)	(0.111)	(0.123)	(0.163)	(0.180)	(0.096)	(0.128)	(0.140)
Comparison mean	-0.000	-0.175	0.183	0.066	-0.102	0.247	-0.045	-0.227	0.140
p-value on equality of effect	*(5)=(6)=(8)=(9): .991*	*(2)=(3): .716*			*(5)=(6): .769*		*(4)=(7): .792*	*(8)=(9): .905*	
Ever enrolled in tertiary education (2016)									
Treatment effect	0.005	0.013	-0.003	0.021	0.055	-0.022	-0.005	-0.013	0.009
Standard error	(0.020)	(0.027)	(0.029)	(0.032)	(0.044)	(0.048)	(0.025)	(0.034)	(0.037)
Comparison mean	0.091	0.075	0.107	0.110	0.095	0.126	0.077	0.060	0.095
p-value on equality of effect	*(5)=(6)=(8)=(9): .588*	*(2)=(3): .686*			*(5)=(6): .236*		*(4)=(7): .525*	*(8)=(9): .655*	
Currently enrolled in tertiary program (2016)									
Treatment effect	0.004	0.017	-0.009	0.040	0.063	0.012	-0.018	-0.012	-0.020
Standard error	(0.018)	(0.025)	(0.027)	(0.029)	(0.040)	(0.044)	(0.023)	(0.031)	(0.034)
Comparison mean	0.080	0.062	0.098	0.094	0.081	0.108	0.070	0.048	0.092
p-value on equality of effect	*(5)=(6)=(8)=(9): .396*	*(2)=(3): .483*			*(5)=(6): .393*		*(4)=(7): .122*	*(8)=(9): .853*	
University (2016)									
Treatment effect	0.022	0.037	0.006	0.044	0.060	0.024	0.010	0.023	-0.005
Standard error	(0.010)**	(0.014)***	(0.015)	(0.017)***	(0.022)***	(0.025)	(0.013)	(0.018)	(0.019)
Comparison mean	0.028	0.013	0.043	0.033	0.018	0.050	0.024	0.010	0.038
p-value on equality of effect	*(5)=(6)=(8)=(9): .171*	*(2)=(3): .132*			*(5)=(6): .277*		*(4)=(7): .098**	*(8)=(9): .273*	
Nurses training (2016)									
Treatment effect	-0.010	-0.015	-0.004	-0.010	-0.008	-0.013	-0.010	-0.020	0.002
Standard error	(0.008)	(0.011)	(0.012)	(0.013)	(0.018)	(0.019)	(0.010)	(0.014)	(0.015)
Comparison mean	0.015	0.022	0.008	0.022	0.032	0.012	0.010	0.015	0.005
p-value on equality of effect	*(5)=(6)=(8)=(9): .768*	*(2)=(3): .491*			*(5)=(6): .860*		*(4)=(7): .992*	*(8)=(9): .293*	
Teachers training (2016)									
Treatment effect	0.002	-0.001	0.006	0.000	0.010	-0.012	0.003	-0.008	0.017
Standard error	(0.011)	(0.014)	(0.016)	(0.017)	(0.023)	(0.026)	(0.013)	(0.018)	(0.020)
Comparison mean	0.027	0.023	0.031	0.029	0.032	0.027	0.025	0.018	0.033
p-value on equality of effect	*(5)=(6)=(8)=(9): .725*	*(2)=(3): .748*			*(5)=(6): .521*		*(4)=(7): .906*	*(8)=(9): .345*	
Years spent attending tertiary education (2016)									
Treatment effect	0.018	0.001	0.039	0.071	0.100	0.036	-0.016	-0.061	0.042
Standard error	(0.036)	(0.049)	(0.053)	(0.058)	(0.079)	(0.087)	(0.046)	(0.062)	(0.068)
Comparison mean	0.144	0.119	0.171	0.188	0.145	0.235	0.114	0.100	0.128
p-value on equality of effect	*(5)=(6)=(8)=(9): .415*	*(2)=(3): .596*			*(5)=(6): .587*		*(4)=(7): .243*	*(8)=(9): .261*	
Total years of education to date (2016)									
Treatment effect	1.145	1.225	1.083	1.302	1.508	1.039	1.052	1.065	1.110
Standard error	(0.149)***	(0.200)***	(0.219)***	(0.242)***	(0.325)***	(0.357)***	(0.189)***	(0.255)***	(0.278)***
Comparison mean	11.140	10.845	11.450	11.230	11.025	11.454	11.078	10.717	11.448
p-value on equality of effect	*(5)=(6)=(8)=(9): .698*	*(2)=(3): .629*			*(5)=(6): .332*		*(4)=(7): .416*	*(8)=(9): .903*	
Plans to continue to tertiary (2013)									
Treatment effect	0.242	0.258	0.233	0.258	0.299	0.207	0.234	0.237	0.248
Standard error	(0.038)***	(0.051)***	(0.056)***	(0.061)***	(0.082)***	(0.091)**	(0.048)***	(0.065)***	(0.070)***
Comparison mean	0.430	0.363	0.500	0.448	0.394	0.506	0.418	0.341	0.496
p-value on equality of effect	*(5)=(6)=(8)=(9): .894*	*(2)=(3): .742*			*(5)=(6): .456*		*(4)=(7): .751*	*(8)=(9): .908*	
Sat for WASSCE exam (2015)									
Treatment effect	0.285	0.287	0.289	0.322	0.325	0.316	0.263	0.268	0.273
Standard error	(0.037)***	(0.050)***	(0.055)***	(0.061)***	(0.081)***	(0.090)***	(0.047)***	(0.064)***	(0.069)***
Comparison mean	0.426	0.373	0.482	0.445	0.420	0.473	0.413	0.340	0.487
p-value on equality of effect	*(5)=(6)=(8)=(9): .928*	*(2)=(3): .977*			*(5)=(6): .939*		*(4)=(7): .440*	*(8)=(9): .955*	
Plans to apply to tertiary (2015)									
Treatment effect	0.183	0.226	0.137	0.172	0.182	0.157	0.191	0.255	0.124
standard error	(0.038)***	(0.051)***	(0.056)**	(0.062)***	(0.083)**	(0.092)*	(0.048)***	(0.065)***	(0.071)*
Comparison mean	0.414	0.356	0.474	0.431	0.399	0.466	0.402	0.325	0.480
p-value on equality of effect	*(5)=(6)=(8)=(9): .575*	*(2)=(3): .239*			*(5)=(6): .835*		*(4)=(7): .812*	*(8)=(9): .174*	
Applied for tertiary education (2015)									
Treatment effect	0.066	0.098	0.032	0.074	0.075	0.074	0.060	0.111	0.009
standard error	(0.028)**	(0.037)***	(0.041)	(0.045)*	(0.060)	(0.067)	(0.035)*	(0.048)**	(0.051)
Comparison mean	0.160	0.135	0.186	0.173	0.164	0.183	0.151	0.114	0.188
p-value on equality of effect	*(5)=(6)=(8)=(9): .540*	*(2)=(3): .232*			*(5)=(6): .996*		*(4)=(7): .798*	*(8)=(9): .145*	
if applied: number of programs applied to (2015)									
Treatment effect	-0.184	-0.024	-0.294	-0.145	-0.132	-0.177	-0.194	z	-0.307
standard error	(0.130)	(0.200)	(0.177)	(0.236)	(0.337)	(0.333)	(0.158)	(0.261)	(0.216)
Comparison mean	1.653	1.495	1.772	1.674	1.447	1.896	1.636	1.543	1.693
p-value on equality of effect	*(5)=(6)=(8)=(9): .792*	*(2)=(3): .313*			*(5)=(6): .924*		*(4)=(7): .862*	*(8)=(9): .314*	
Admitted to a tertiary program (2015)									
Treatment effect	0.008	0.013	0.004	0.009	0.023	-0.009	0.006	0.006	0.013
standard error	(0.020)	(0.027)	(0.030)	(0.033)	(0.044)	(0.049)	(0.025)	(0.035)	(0.038)
Comparison mean	0.081	0.060	0.103	0.093	0.070	0.118	0.072	0.052	0.092
p-value on equality of effect	*(5)=(6)=(8)=(9): .969*	*(2)=(3): .826*			*(5)=(6): .631*		*(4)=(7): .948*	*(8)=(9): .899*	

Table A10: Outcomes for Bottom Half of JHS Exam Scores cont.

	Combined			Academic Major Admits			Vocational Major Admits		
	All	Female	Male	All	Female	Male	All	Female	Male
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Inv. hyperbolic sine earnings (2016)									
Treatment effect	0.430	0.489	0.435	-0.073	0.005	-0.226	0.730	0.763	0.835
standard error	(0.227)*	(0.299)	(0.327)	(0.368)	(0.485)	(0.532)	(0.287)**	(0.380)**	(0.414)**
Comparison mean	3.214	2.413	4.054	3.143	2.313	4.047	3.263	2.484	4.059
p-value on equality of effect	*(5)=(6)=(8)=(9): .262*	*(2)=(3): .902*			*(5)=(6): .748*		*(4)=(7): .085**	*(8)=(9): .898*	
Log earnings last month if positive (2016)									
Treatment effect	-0.062	-0.167	0.066	-0.063	-0.022	-0.108	-0.067	-0.256	0.165
standard error	(0.095)	(0.136)	(0.127)	(0.161)	(0.236)	(0.211)	(0.119)	(0.169)	(0.160)
Comparison mean	5.066	4.792	5.251	5.053	4.761	5.252	5.074	4.812	5.250
p-value on equality of effect	*(5)=(6)=(8)=(9): .338*	*(2)=(3): .211*			*(5)=(6): .787*		*(4)=(7): .986*	*(8)=(9): .071**	
Positive earnings (2016)									
Treatment effect	0.081	0.101	0.068	-0.007	0.001	-0.025	0.135	0.159	0.125
standard error	(0.038)**	(0.051)**	(0.056)	(0.062)	(0.083)	(0.091)	(0.049)***	(0.065)**	(0.071)*
Comparison mean	0.556	0.441	0.679	0.545	0.424	0.678	0.564	0.452	0.679
p-value on equality of effect	*(5)=(6)=(8)=(9): .248*	*(2)=(3): .660*			*(5)=(6): .832*		*(4)=(7): .072**	*(8)=(9): .719*	
Total earnings last month (GHX) (2016)									
Treatment effect	7.848	-0.062	23.004	-19.314	-13.876	-30.017	24.029	6.970	55.064
standard error	(17.686)	(23.383)	(25.564)	(28.731)	(37.979)	(41.722)	(22.439)	(29.782)	(32.441)*
Comparison mean	134.854	82.022	190.202	136.261	79.106	198.471	133.887	84.090	184.703
p-value on equality of effect	*(5)=(6)=(8)=(9): .354*	*(2)=(3): .505*			*(5)=(6): .775*		*(4)=(7): .234*	*(8)=(9): .275*	
Total hours worked last month (2016)									
Treatment effect	14.612	20.422	8.688	-2.401	4.578	-11.771	24.518	28.768	21.273
standard error	(8.593)*	(11.605)*	(12.696)	(13.921)	(18.816)	(20.672)	(10.889)**	(14.770)*	(16.108)
Comparison mean	82.658	66.354	99.899	76.366	60.569	93.694	87.000	70.467	104.047
p-value on equality of effect	*(5)=(6)=(8)=(9): .390*	*(2)=(3): .495*			*(5)=(6): .559*		*(4)=(7): .128*	*(8)=(9): .731*	
Worked over 10 hours in the past month (2016)									
Treatment effect	0.089	0.137	0.041	-0.028	0.025	-0.096	0.158	0.202	0.123
standard error	(0.039)**	(0.051)***	(0.056)	(0.063)	(0.083)	(0.092)	(0.049)***	(0.065)***	(0.071)*
Comparison mean	0.538	0.424	0.659	0.537	0.415	0.671	0.538	0.430	0.651
p-value on equality of effect	*(5)=(6)=(8)=(9): .049**(2)=(3): .205*				*(5)=(6): .329*		*(4)=(7): .019**	*(8)=(9): .414*	
Total hours worked last month if positive (2016)									
Treatment effect	2.319	3.674	-0.002	-2.621	3.746	-8.074	3.066	-0.048	3.862
standard error	(10.848)	(15.710)	(15.005)	(18.299)	(27.087)	(25.015)	(13.463)	(19.503)	(18.830)
Comparison mean	147.013	148.272	146.143	136.801	138.234	135.803	153.959	155.149	153.141
p-value on equality of effect	*(5)=(6)=(8)=(9): .983*	*(2)=(3): .865*			*(5)=(6): .748*		*(4)=(7): .802*	*(8)=(9): .885*	
Earnings per hour if worked over 10 hours (2016)									
Treatment effect	-0.835	-0.730	-0.774	-0.855	-0.231	-1.306	-0.807	-1.050	-0.435
standard error	(0.433)*	(0.620)	(0.598)	(0.750)	(1.079)	(1.032)	(0.533)	(0.767)	(0.738)
Comparison mean	2.464	1.762	2.941	2.765	1.687	3.494	2.256	1.814	2.559
p-value on equality of effect	*(5)=(6)=(8)=(9): .836*	*(2)=(3): .958*			*(5)=(6): .472*		*(4)=(7): .958*	*(8)=(9): .564*	
Total hours helping family in past week (2016)									
Treatment effect	2.192	1.065	4.384	1.686	3.342	4.352	2.552	-0.488	4.558
standard error	(3.103)	(4.159)	(4.292)	(4.801)	(6.656)	(6.696)	(4.147)	(5.592)	(5.765)
Comparison mean	16.472	20.536	12.170	18.056	21.395	13.694	15.388	19.840	11.303
p-value on equality of effect	*(5)=(6)=(8)=(9): .919*	*(2)=(3): .580*			*(5)=(6): .915*		*(4)=(7): .892*	*(8)=(9): .532*	
Enrolled in formal study/training (2016)									
Treatment effect	0.006	0.021	-0.011	0.048	0.065	0.028	-0.021	-0.005	-0.034
standard error	(0.020)	(0.027)	(0.029)	(0.032)	(0.044)	(0.048)	(0.025)	(0.034)	(0.037)
Comparison mean	0.091	0.072	0.111	0.105	0.092	0.119	0.081	0.058	0.105
p-value on equality of effect	*(5)=(6)=(8)=(9): .348*	*(2)=(3): .417*			*(5)=(6): .564*		*(4)=(7): .092**	*(8)=(9): .571*	
Positive earnings or in school (2016)									
Treatment effect	0.069	0.105	0.037	0.016	0.065	-0.050	0.099	0.127	0.090
standard error	(0.037)*	(0.049)**	(0.054)	(0.061)	(0.080)	(0.088)	(0.047)**	(0.063)**	(0.069)
Comparison mean	0.627	0.504	0.756	0.632	0.505	0.769	0.624	0.504	0.747
p-value on equality of effect	*(5)=(6)=(8)=(9): .434*	*(2)=(3): .354*			*(5)=(6): .337*		*(4)=(7): .281*	*(8)=(9): .690*	
Wage worker (2016)									
Treatment effect	0.041	0.065	0.015	-0.081	-0.001	-0.182	0.115	0.106	0.133
standard error	(0.034)	(0.047)	(0.051)	(0.056)	(0.075)	(0.083)**	(0.044)***	(0.059)*	(0.064)**
Comparison mean	0.241	0.179	0.305	0.244	0.180	0.313	0.239	0.178	0.300
p-value on equality of effect	*(5)=(6)=(8)=(9): .012**(2)=(3): .467*				*(5)=(6): .107*		*(4)=(7): .005****	*(8)=(9): .756*	
Day or seasonal laborer (2016)									
Treatment effect	0.037	0.044	0.037	0.031	0.077	-0.030	0.040	0.023	0.079
standard error	(0.027)	(0.035)	(0.039)	(0.044)	(0.058)	(0.063)	(0.034)	(0.045)	(0.049)
Comparison mean	0.126	0.047	0.210	0.129	0.028	0.240	0.124	0.060	0.189
p-value on equality of effect	*(5)=(6)=(8)=(9): .496*	*(2)=(3): .891*			*(5)=(6): .211*		*(4)=(7): .873*	*(8)=(9): .403*	

Table A10 continues on next page

Table A10: Outcomes for Bottom Half of JHS Exam Scores cont.

	Combined			Academic Major Admits			Vocational Major Admits		
	All	Female	Male	All	Female	Male	All	Female	Male
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Farming (2016)									
Treatment effect	-0.019	-0.023	-0.011	0.003	0.025	-0.027	-0.032	-0.054	-0.002
standard error	(0.018)	(0.024)	(0.026)	(0.029)	(0.039)	(0.042)	(0.022)	(0.030)*	(0.033)
Comparison mean	0.046	0.022	0.071	0.044	0.018	0.074	0.047	0.025	0.070
p-value on equality of effect	*(5)=(6)=(8)=(9): .400*	*(2)=(3): .741*			*(5)=(6): .360*		*(4)=(7): .338*	*(8)=(9): .245*	
Working for own or family business (2016)									
Treatment effect	0.028	0.045	0.009	0.034	-0.011	0.087	0.021	0.074	-0.036
standard error	(0.036)	(0.049)	(0.054)	(0.059)	(0.080)	(0.088)	(0.046)	(0.063)	(0.068)
Comparison mean	0.306	0.286	0.326	0.292	0.254	0.333	0.315	0.309	0.321
p-value on equality of effect	*(5)=(6)=(8)=(9): .550*	*(2)=(3): .627*			*(5)=(6): .409*		*(4)=(7): .867*	*(8)=(9): .233*	
Actively searching for a job (2016)									
Treatment effect	0.104	0.130	0.078	0.145	0.161	0.122	0.081	0.116	0.051
standard error	(0.035)***	(0.048)***	(0.052)	(0.058)**	(0.078)**	(0.085)	(0.045)*	(0.061)*	(0.066)
Comparison mean	0.276	0.235	0.320	0.274	0.226	0.327	0.277	0.241	0.315
p-value on equality of effect	*(5)=(6)=(8)=(9): .739*	*(2)=(3): .461*			*(5)=(6): .733*		*(4)=(7): .377*	*(8)=(9): .471*	
If no earnings and no school: actively searching for a job (2016)									
Treatment effect	0.227	0.308	0.050	0.267	0.347	0.062	0.193	0.282	0.005
standard error	(0.064)***	(0.076)***	(0.112)	(0.098)***	(0.119)***	(0.170)	(0.084)**	(0.099)***	(0.153)
Comparison mean	0.322	0.257	0.459	0.305	0.243	0.450	0.333	0.268	0.465
p-value on equality of effect	*(5)=(6)=(8)=(9): .226*	*(2)=(3): .057**			*(5)=(6): .171*		*(4)=(7): .568*	*(8)=(9): .130*	
If earnings: actively searching for a job (2016)									
Treatment effect	0.039	0.013	0.075	0.074	0.012	0.119	0.023	0.014	0.053
standard error	(0.045)	(0.065)	(0.061)	(0.076)	(0.112)	(0.100)	(0.056)	(0.080)	(0.076)
Comparison mean	0.274	0.237	0.300	0.285	0.242	0.314	0.267	0.233	0.290
p-value on equality of effect	*(5)=(6)=(8)=(9): .855*	*(2)=(3): .477*			*(5)=(6): .480*		*(4)=(7): .592*	*(8)=(9): .730*	
Lowest daily wage willing to work for(GHX) (2013)									
Treatment effect	-1.442	0.110	-2.993	-0.059	0.686	-1.124	-2.346	-0.448	-4.080
standard error	(0.976)	(1.303)	(1.418)**	(1.590)	(2.130)	(2.318)	(1.231)*	(1.651)	(1.794)**
Comparison mean	9.949	8.012	11.959	9.291	7.163	11.550	10.396	8.599	12.230
p-value on equality of effect	*(5)=(6)=(8)=(9): .315*	*(2)=(3): .107*			*(5)=(6): .566*		*(4)=(7): .255*	*(8)=(9): .136*	
Willing to move for wage employment (2013)									
Treatment effect	0.041	0.030	0.056	0.039	0.021	0.060	0.042	0.033	0.054
standard error	(0.026)	(0.035)	(0.039)	(0.042)	(0.057)	(0.063)	(0.033)	(0.045)	(0.049)
Comparison mean	0.870	0.854	0.888	0.857	0.846	0.869	0.879	0.859	0.900
p-value on equality of effect	*(5)=(6)=(8)=(9): .956*	*(2)=(3): .611*			*(5)=(6): .648*		*(4)=(7): .958*	*(8)=(9): .748*	
Observations	1983	1002	981	808	409	399	1175	593	582

Notes: Year of survey in parentheses. Regressions estimate the effect on those below the 50th percentile of each subgroup's JHS exam score distribution. See Table 3 notes for description of columns; all regressions control for region fixed effects, JHS finishing exam score (BECE) and missing JHS finishing exam scores; standard errors in parentheses, with ***, **, * indicating significance at 1, 5 and 10%. 1984 observations in 2013 survey, 2011 observations in 2015 survey and 1996 observations in 2016 survey.

Table WA1: Financial Inclusion

	Combined			Academic Major Admits			Vocational Major Admits		
	All	Female	Male	All	Female	Male	All	Female	Male
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Main source of income is own income (2016)									
Treatment effect	0.030	0.052	-0.003	0.034	0.051	-0.005	0.027	0.051	-0.002
Standard error	(0.024)	(0.033)	(0.032)	(0.038)	(0.051)	(0.051)	(0.031)	(0.042)	(0.042)
Comparison mean	0.581	0.416	0.754	0.556	0.375	0.754	0.599	0.446	0.754
p-value on equality of effect	*(5)=(6)=(8)=(9): .708*	*(2)=(3): .236*			*(5)=(6): .438*		*(4)=(7): .893*	*(8)=(9): .375*	
Main source of income is spouse's income (2016)									
Treatment effect	-0.020	-0.033	-0.001	-0.021	-0.031	-0.001	-0.019	-0.035	-0.000
Standard error	(0.014)	(0.018)*	(0.018)	(0.021)	(0.029)	(0.029)	(0.018)	(0.024)	(0.024)
Comparison mean	0.086	0.166	0.003	0.077	0.148	0.000	0.092	0.178	0.005
p-value on equality of effect	*(5)=(6)=(8)=(9): .654*	*(2)=(3): .208*			*(5)=(6): .471*		*(4)=(7): .964*	*(8)=(9): .294*	
Main source of income is guardian's income (2016)									
Treatment effect	0.007	0.002	0.017	0.005	0.000	0.017	0.009	0.003	0.016
Standard error	(0.020)	(0.028)	(0.028)	(0.031)	(0.044)	(0.044)	(0.026)	(0.036)	(0.036)
Comparison mean	0.203	0.261	0.141	0.223	0.283	0.158	0.189	0.246	0.130
p-value on equality of effect	*(5)=(6)=(8)=(9): .987*	*(2)=(3): .710*			*(5)=(6): .786*		*(4)=(7): .928*	*(8)=(9): .810*	
Has a bank account (2013)									
Treatment effect	0.060	0.109	0.008	0.071	0.129	0.006	0.053	0.095	0.009
Standard error	(0.023)***	(0.033)***	(0.033)	(0.036)*	(0.051)**	(0.051)	(0.030)*	(0.043)**	(0.042)
Comparison mean	0.314	0.236	0.396	0.315	0.232	0.404	0.314	0.238	0.390
p-value on equality of effect	*(5)=(6)=(8)=(9): .168*	*(2)=(3): .028***			*(5)=(6): .088**		*(4)=(7): .698*	*(8)=(9): .153*	
Has a bank account (2016)									
Treatment effect	0.018	0.050	-0.020	0.023	0.079	-0.046	0.014	0.030	-0.003
Standard error	(0.024)	(0.034)	(0.034)	(0.038)	(0.054)	(0.054)	(0.032)	(0.045)	(0.044)
Comparison mean	0.434	0.350	0.521	0.431	0.318	0.554	0.435	0.373	0.499
p-value on equality of effect	*(5)=(6)=(8)=(9): .398*	*(2)=(3): .149*			*(5)=(6): .101*		*(4)=(7): .868*	*(8)=(9): .599*	
Would not be able to cope with a 200 GHX emergency (2013)									
Treatment effect	-0.008	-0.032	0.017	-0.007	-0.026	0.014	-0.008	-0.036	0.019
Standard error	(0.010)	(0.015)**	(0.015)	(0.016)	(0.023)	(0.023)	(0.013)	(0.019)*	(0.019)
Comparison mean	0.050	0.066	0.032	0.048	0.068	0.027	0.051	0.065	0.036
p-value on equality of effect	*(5)=(6)=(8)=(9): .123*	*(2)=(3): .018***			*(5)=(6): .213*		*(4)=(7): .965*	*(8)=(9): .040***	
Would use savings to deal with a 200 GHX emergency (2013)									
Treatment effect	-0.010	0.002	-0.023	0.004	0.029	-0.026	-0.019	-0.016	-0.022
Standard error	(0.019)	(0.027)	(0.027)	(0.030)	(0.042)	(0.042)	(0.025)	(0.035)	(0.035)
Comparison mean	0.186	0.147	0.225	0.185	0.129	0.246	0.186	0.160	0.212
p-value on equality of effect	*(5)=(6)=(8)=(9): .764*	*(2)=(3): .502*			*(5)=(6): .354*		*(4)=(7): .557*	*(8)=(9): .899*	
Would borrow from network to deal with a 200 GHX emergency (2013)									
Treatment effect	0.013	0.028	-0.003	0.002	0.013	-0.010	0.020	0.038	0.002
Standard error	(0.025)	(0.035)	(0.035)	(0.039)	(0.055)	(0.055)	(0.032)	(0.046)	(0.045)
Comparison mean	0.540	0.526	0.555	0.530	0.511	0.550	0.547	0.536	0.559
p-value on equality of effect	*(5)=(6)=(8)=(9): .907*	*(2)=(3): .536*			*(5)=(6): .763*		*(4)=(7): .719*	*(8)=(9): .574*	
Would rely on donations from network to deal with a 200 GHX emergency (2013)									
Treatment effect	-0.026	-0.041	-0.008	-0.039	-0.073	-0.000	-0.016	-0.019	-0.012
Standard error	(0.025)	(0.035)	(0.035)	(0.038)	(0.054)	(0.054)	(0.032)	(0.045)	(0.045)
Comparison mean	0.461	0.502	0.419	0.450	0.511	0.385	0.469	0.496	0.441
p-value on equality of effect	*(5)=(6)=(8)=(9): .779*	*(2)=(3): .500*			*(5)=(6): .343*		*(4)=(7): .646*	*(8)=(9): .911*	
Borrowed from a formal financial institution in past 12 months (2013)									
Treatment effect	-0.034	-0.052	-0.019	-0.058	-0.074	-0.049	-0.017	-0.037	0.001
Standard error	(0.023)	(0.032)	(0.032)	(0.036)	(0.051)	(0.050)	(0.030)	(0.042)	(0.042)
Comparison mean	0.318	0.280	0.358	0.306	0.257	0.359	0.326	0.296	0.357
p-value on equality of effect	*(5)=(6)=(8)=(9): .700*	*(2)=(3): .466*			*(5)=(6): .729*		*(4)=(7): .382*	*(8)=(9): .518*	
Personal (non-food) in last 30 days, in GHX (2013)									
Treatment effect	0.764	5.843	-4.248	5.029	7.850	2.247	-2.220	4.442	-8.787
standard error	(2.595)	(3.677)	(3.659)	(4.053)	(5.737)	(5.724)	(3.381)	(4.797)	(4.767)*
Comparison mean	72.013	70.611	73.472	70.120	68.471	71.896	73.305	72.113	74.518
p-value on equality of effect	*(5)=(6)=(8)=(9): .103*	*(2)=(3): .051**			*(5)=(6): .489*		*(4)=(7): .170*	*(8)=(9): .050**	
Current stock of savings (2013)									
Treatment effect	3.522	27.347	-21.356	-2.618	29.698	-37.938	7.605	25.676	-10.661
standard error	(11.063)	(15.600)*	(15.525)	(17.282)	(24.327)	(24.273)	(14.422)	(20.349)	(20.221)
Comparison mean	102.817	72.721	134.161	110.017	69.211	153.962	97.890	75.191	120.995
p-value on equality of effect	*(5)=(6)=(8)=(9): .124*	*(2)=(3): .027***			*(5)=(6): .049***		*(4)=(7): .649*	*(8)=(9): .205*	
Ever registered for National Health Insurance Scheme (2013)									
Treatment effect	0.010	0.031	-0.003	0.009	0.055	-0.025	0.011	0.014	0.013
standard error	(0.023)	(0.032)	(0.032)	(0.037)	(0.050)	(0.050)	(0.031)	(0.042)	(0.042)
Comparison mean	0.639	0.760	0.512	0.628	0.746	0.500	0.646	0.769	0.520
p-value on equality of effect	*(5)=(6)=(8)=(9): .729*	*(2)=(3): .453*			*(5)=(6): .254*		*(4)=(7): .953*	*(8)=(9): .987*	

Notes: Year of survey in parentheses. See Table 2 notes for description of columns; all regressions control for region fixed effects, JHS finishing exam score (BECE) and missing JHS finishing exam scores; standard errors in parentheses, with ***, **, * indicating significance at 1, 5 and 10%. 1996 observations in 2016 survey. 1,984 observations in 2013 survey.