

The changing path to adulthood for girls in six African countries from the 1990s to the 2010s: An Analysis based on the Demographic and Health Surveys

Jane Mariara

University of Nairobi, University Way, Nairobi, Kenya

Jane.mariara@gmail.com

*Andy McKay***

Department of Economics, University of Sussex, Brighton, BN1 9SL, UK

a.mckay@sussex.ac.uk

Andy Newell

Department of Economics, University of Sussex, Brighton, BN1 9SL, UK and IZA

a.t.newell@sussex.ac.uk

Cinzia Rienzo

National Institute of Economic and Social Research, 2 Dean Trench St,
Westminster, London SW1P 3HE, UK

c.rienzo@niesr.ac.uk

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* **Corresponding author:** a.mckay@sussex.ac.uk

Abstract

In this paper, we study on a comparative basis the school to work transition of young women and young men in six countries in sub-Saharan Africa, and examine how this has evolved over recent years, based on data collected by Demographic and Health Surveys. We examine educational attainments and the nature of early jobs young people are able to obtain, and also consider their relationship to marriage and fertility outcomes, factors which are likely to be particularly relevant for young women. A pooled regression analysis over time shows that educational levels have increased substantially and gender gaps have narrowed in most countries. Access to better jobs has improved much more slowly and with continued gender gaps in most countries, with agriculture still being the dominant sector of employment for most young men and women. We model correlates of key educational outcomes and access to different types of jobs controlling for individual and household level characteristics, including marital status, presence of children and wealth. Attaining a high level of education is critical for access to the best jobs, and is also associated with young women marrying and having children later.

Key words

Youth, employment, education, school-to-work transition, sub-Saharan Africa

JEL Codes:

I21, J21, J24, O55

1. Introduction

Youth employment is a major challenge across the world, and one which is especially pressing in Sub-Saharan Africa where according to the World Bank 11 million young people enter the labour market each year (Filmer and Fox, 2014). The 2012 *African Economic Outlook* (African Development Bank et al, 2012) also emphasised that higher recent growth in Sub-Saharan Africa has not yet succeeded in generating a commensurate increase in job opportunities. Young people are becoming increasingly educated over time (in terms of years of schooling and attainment), but the limited number of formal sector work opportunities means that the vast majority of these labour market entrants are likely to work in agriculture, household businesses, or otherwise in the informal sector, typically earning low incomes. Job creation is a major challenge in sub-Saharan African countries to avoid wasting the opportunity offered by their youth populations.

While certainly both males and females face these problems, the situation is likely to be particularly challenging in relation to young women. While female labour force participation in Sub-Saharan Africa is higher than in many other areas of the developing world, fewer work in established waged jobs in Sub-Saharan Africa compared to other regions. Female educational attainments are also relatively low on an international scale. To add to this, fertility rates much higher than other world regions, with young women typically having children at younger ages. The young women in this region would appear to reconcile the competing claims of work and family on their time by working more in household agricultural or non-farm activities, or casual wage work (Kabeer, 2012). Expanding women's opportunities for full and productive paid employment; and improving their access to education/adult literacy programs have been identified as some of the key strategies to increase women's economic empowerment in Africa (Wekwete, 2012, and Kabeer, 2012), which in turn carries many other benefits.

We focus in this paper specifically on the school to work transition of young women in six sub-Saharan African countries. This analysis has been conducted as part of an IDRC funded research project looking at early labour market experiences of young women in these six countries (Burkina Faso, Ethiopia, Ghana, Kenya, Tanzania and Uganda). In this paper we address both the questions of educational attainment and access to specific types of job for young women, also making comparisons with the situation of young men. Educational and work decisions clearly interact with each other, with each decision potentially affecting and being affected by the other. But in the case of young women in particular both also interact with a fertility status, again potentially in both directions. The school to work (and motherhood) transition is beset by deep and complex issues of endogeneity.

Educational attainment is likely to play a key role in the other decisions. Attaining a higher level of reasonable quality education will be important to enable young people to access better quality jobs. And in the case of young women in particular, a higher level of education is likely to be associated with later marriage and childbirth and perhaps also smaller family size. By contrast, low levels of education will limit the range of jobs young people are able to do, and this are also likely to be associated with earlier marriage and childbirth for young women at least. While some of these issues are equally important for young women and young men, the consequences of early childbirth typically affect young women disproportionately.

Previous research on school to work transitions of young people in the developing world is strongly associated with the International Labour Organisation (ILO). For instance, Parent (2006) studies the work and life transitions made over the following ten years of a group of people in Burkina Faso who were 15-19 years old in 1993. He finds that among those with no schooling, the vast majority of men simply make the transition from household worker to head of household and the vast majority of women stay in domestic work. What emerges is that education beyond primary level seems to be a

necessary condition for gaining work outside the household. This study suggests that dropping out of school early imposes a major penalty in terms of the breadth of work options. Shamchiyeva et al (2014) analyse the school-to-work transition for 15-25 years old in Tanzania and find that girls are more likely (than boys) to have dropped out of secondary school, and if they did, they are more likely to have done so for financial reasons. Whatever causes girls to drop out more than boys not only affects the individuals but also disproportionately harms the society's human capital.

These studies though do not also take account of fertility. It is particularly challenging to address the deep issues of endogeneity that affect the educational, fertility and work choices of young women, and only a limited number of country specific studies have sought to address these modelling issues addressing the deep-seated endogeneity challenges. Heath and Mobarak (2015) study these choices in the case of Bangladesh, allowing for the proximity or not of garment factories (which offer many employment opportunities for young women) as an exogenous intervention. They use this to model educational attainment, marriage, childbirth, and time of starting work, using duration models for some of these outcomes. Marchetta and Sahn (2016) in a study for youth in Senegal do not have an exogenous intervention, but have high quality data that enable plausible exclusion restrictions at each stage. They adopt a broadly similar econometric approach to Heath and Mobarak, and show that access to primary and secondary schools and improved school quality both increase grade attainment and the chances of staying on at school. Additionally, using data on the girls' parents, they find that higher levels of parents' education reduce both the chances at a given age of marriage and the age of first birth.

In this paper rather than perform an in-depth country study (others are being done as part of this project), we undertake a six country comparative analysis of the school to work transition, examining changes over time, comparing the countries, and seeking to compare young women with young men where feasible. For this purpose we employ Demographic and Health Surveysⁱ (DHS; Macro

International, 2006) for periods of time from the 1990s to the 2010s, in order (a) to understand development over time across the countries and (b) to eliminate, or minimise, temporal and international differences in survey questions and method. This approach does not enable the identification of exclusion restrictions to address the endogeneity concerns (which anyway should probably differ by country). Rather we seek to analyse the data descriptively, including considering changes over time by country, and then to model correlates of key educational attainment outcomes and access to certain categories of jobs, taking characteristics of the individuals, including their fertility and marital status, into account.

We focus here on six countries from Eastern and West Africa, with differing characteristics. According to many indicators, Ghana and Kenya would be the most developed of the countries considered here, with Burkina Faso and Ethiopia the least developed (though both have known significant growth in recent years). Tanzania and Uganda are in several respects intermediate between these four. These rankings though do depend to some extent on the criteria considered. Most of these countries have experienced significant and sometimes long periods of economic growth over the past 20 years, though in the case of Kenya this has been uneven over time.

The aim here is to document the milestones: leaving education, getting married and getting work and how these evolve and interact. Our focus is on the age range from 15 to 29, and we often analyse young men in a parallel to young women to understand where the gender gaps are. Our analysis finds, unsurprisingly, that in most of the six countries considered here, relatively few young women and men hold wage jobs, and especially better quality jobs. While this has increased gradually over time, it has increased much more slowly than the rate of educational attainment. In most countries it is only those with at least some secondary education who have a higher probability of holding better quality jobs. But very large numbers with such qualifications still do not access these jobs.

The paper is structured as follows. Section 2 presents the data source we use for the six countries, the DHS surveys, discussing their strengths and limitations. Section 3 then presents a descriptive analysis of the key outcomes based on this data source, while section 4 presents the country level analysis of changes over time using a difference in difference approach to look at changing gender gaps. Section 5 then presents a multivariate analysis of the correlates of e key educational and work outcomes of interest, after which section 6 offers some summary conclusions.

2. Data sources

Our intention in this paper is to analyse the education and labour markets for young women, alongside their early experiences of marriage or childbirth. Our interest is to compare between the six focus countries of the project, as well as to examine changes over time within each country and to make comparisons between young women and young men, who may face many of the same challenges. Such analysis necessarily requires use of data sources that are comparable between the countries and over time.

Each of the six countries have multiple household surveys which collect information on the variables of interest here and which are often comparable over time within the country. But given the focus of this paper, the problem is that the surveys are generally quite different from one country to another, raising challenges for cross-country comparability. Labour force surveys have not been conducted in all these countries, and are often less frequent. In this paper we base our analysis on the Demographic and Health Surveys (DHS), which have been collected on multiple occasions in all the countries and which collect information in each of the areas of interest. This is not an obvious source

for data on education and labour in particular, but it does have information on these aspects and with judicious use is comparable within and between countries.

The DHS surveys in all these six countries are nationally representative and have been conducted between three and six times. They are based on three main questionnaires. A major focus is on the women's questionnaire, asked to women in the reproductive age range (15-49 years) and which collects a large amount of information about the women themselves and about their children. In addition to this, a second questionnaire collects information on the households in which these women reside. A third questionnaire asks a smaller set of questions, though broadly similar in nature, to men aged 15 years and above. A smaller number of men though are surveyed compared to the women. In general, the core elements of these questionnaires are the same between countries and between one round and the next within countries, though additional elements have been added over time.

The survey does collect information on all three key areas of interest for this paper: education, childbirth/marriage and work. Given the nature of the DHS surveys, with its major focus on collecting data on demographics and health related issues, they are an excellent source of precise information on childbirth and marriage/cohabitation. But the surveys also collect a range of additional relevant information beyond demographics and health. The level of educational completion and current educational attendance is collected for all individuals, and brief literacy tests are conducted, although given the nature of the survey there is limited information on the nature of the education. In relation to work, all individuals are asked if they currently work, and some limited information is collected about that work including the occupation, its employment status (self employed, unpaid family worker, employee outside the household), whether it is seasonal etc.. All this information is available for both men and women, based on essentially the same questions.

It is important to recognise that there is less detail in the DHS surveys on education and labour compared to many regular household surveys. For many questions relevant to this paper it would be helpful to have more information on the nature of education and work than is available from this source. The DHS is though an excellent source of very high quality information on childbirth in particular, something often collected less precisely in household surveys (where for example it is often difficult to match mothers and children). But the critical advantage of the DHS survey is that information on all three aspects are available for the same people, in a way which is comparable over time within countries and in particular which is comparable between countries. No other survey would enable the six country comparison we are able to do here. Further, the summary estimates the surveys give of educational attainment and labour outcomes are consistent with other sources, and the data quality in these areas is likely to be much better than World Development Indicators and other sources that are commonly used in cross-country comparison. They also enable disaggregation at the country level according to different criteria, such as location and wealth.

In doing so it is important to be aware of the limited nature of the information in some areas. This particularly applies to the labour data, where sometimes the precise classification of occupations sometimes differs from one country to another (or over time within countries). In addition, while the question about labour force participation is the same everywhere, this is not a labour force survey and it remains possible that the interpretation of what “working” means might not have been entirely consistently applied everywhere. These issues are important and need to be recognised. Here we take care to analyse this data in a way to ensure consistency across countries and over time as best as we can. This means for example choosing not to use some questions or occupational categories where we cannot be confident of comparability.

The approach we have taken here is to compare the latest survey available in each country (which ranges from 2010 to 2014 depending on the country) with the earliest DHS survey which we judge to be sufficiently comparable (ranging between 1993 and 2000). The time period covered here ranges from 11 years in the case of Ethiopia (where the first DHS survey was conducted in 2000) to 21 years in the cases of Ghana and Kenya. The fact that we are comparing different lengths of time needs to be allowed for when comparing changes between countries.

In this paper we focus on the educational levels young people attain and the types of jobs they can obtain as a result, looking exclusively at those in the 15 to 29 year age range and often subsets of this. We also carefully analyse marital/cohabitation status and number of children, as important outcomes in their own right but also as potentially very important correlates of the educational and work outcomes above. In the correlation analysis, we also use as a key correlate a measure of the wealth of the household in which the individual currently lives. DHS surveys do not collect information on household consumption or income, but they do collect information on key assets owned by households and on housing characteristics. Macro International, who conduct the DHS surveys, have used these to construct household asset indices for each survey using factor analysis. We make extensive use of a standardised version of this in the analysis.

3: Some Descriptives

We begin with a descriptive analysis of some key indicators in the data. Turning first to marriage, Table 1 shows that the age at which the majority of young women are married had been rising in most of these countries over the first decade or so of this century. There is quite a lot of variation across countries: in Burkina Faso, Tanzania and Uganda, girls in the survey get married earlier than those in Kenya and Ghana, for instance. Table 2 gives percentage of young women in education, by age. Again we see a shift to staying later in education by comparing country results over time.

However, it is important to note that there was a small change in the question: in the earlier surveys, the question was about current attendance, whereas in the later surveys the question was about attendance in recent months.

[Table 1 around here]

[Table 2 around here]

[Table 3 around here]

Table 3 illustrates clearly that marriage often marks the end of education. We are not assuming a direction of causality, but a comparison of Tables 2 and 3 for, say, 19-year-olds shows really large gaps in rates of school enrolment between married and unmarried young women. In all countries very few married women go to school.

In Table 4 we compare literacy test results between all respondents and those holding professional, managerial, technical and clerical jobs (white-collar jobs for short). These tests were taken as part of the surveys, asking respondents to read a sentence in a relevant language. The results could not be starker: they improve everywhere over time, dramatically so for some countries. Also, the literacy scores are better for all young men compared to all young women. Of course, white-collar workers have much higher scores. The high scores may be selection, and probably mostly are, but it could also be that white-collar work improves literacy. One other perhaps surprising and suggestive result of note is that among white collar workers, the literacy proportions are uniformly lower for young men than for young women, giving the result that white collar women are more literate than their male counterparts. Perhaps they have to be?

[Table 4 around here]

[Table 5 around here]

Table 5 partly gives the data from Table 1 in a slightly different way. Here we present the ages at which at least 50 percent of young girls (a) have left the household of origin and (b) are married. We find upward movement in Burkina Faso, Ghana and Uganda, although not in the other countries.

[Table 6 around here]

Lastly in Table 6 we turn to occupations. For several of our six countries, changes were made to certain occupational categories over the years. As a consequence, we present a comparison of two contrasting countries, Ethiopia and Ghana, with the fullest and most consistent occupational information. When making comparisons of trends over time, bear in mind that for Ghana, the time between first and latest survey is 21 years, whereas for Ethiopia it is only 11 years. As before, we see the rise in females staying on at school in both countries, though not for males. We also see a rise in professional, management, technical and clerical work, in both countries and for both men and women. However, the rise in Ghana is larger, even allowing for the larger time gap, and from a higher base. In contrast, own-account agricultural work declined a lot in relative importance in both countries both for men and for women, again by more in Ghana. Sales work, generally more important for women, grew in importance for all groups but especially for Ghanaian women. The share of manual work grew for men, again especially in Ghana. The general pattern of changing occupations over the period is thus a reduced likelihood to work in agriculture, an increased likelihood for women to work in sales and for men to work in manual activities.

The sharp reduction in agriculture is also present in Kenya, but this is not seen in the other three countries. White collar jobs increase in most countries, but the proportions of young people doing such work remain small.

4. A regression analysis of gender gaps and their changes over time

We focus now on two key educational outcomes and two job outcomes which can be defined consistently across the different data sets we are using. On education it is clear from the analysis of the previous section that being literate is a necessary – though far from sufficient – condition for access to better quality jobs. We choose then to focus on this outcome and on individuals having some level of secondary education, a level to which many young people in these countries still fail to reach. By age 15 in all countries individuals would be expected to be in secondary school if they were following the normal educational pattern, though many drop out of school before this point or are in lower classes than they should be for their age. In terms of jobs we focus on two categories which can be clearly defined consistently across all countries and years: working in a professional, managerial, technical or clerical job (white collar work), an activity which definitely requires at least literacy and often higher educational attainments to enter, and working in agriculture, an activity which does not have educational requirements to enter and which most people could therefore participate in. While the data is not collected as to whether the white collar jobs are in the public or private sector, the detailed occupational classification suggests that both are well represented. The vast majority of the agricultural work is self-employment, though some are also wage labourers. We define the educational variables for those in the 15-20 year age range and the work variables for those aged from 21 to 29 years inclusive. The former age range have reached the official secondary school age in all countries while most in the latter age range are likely to have completed full time education.

In this section we undertake a regression analysis for each country to identify the extent of gender gaps in these four key outcome variables and how these have evolved over this time. To do this, the earlier and later data sets for women and men for each country are pooled together; and we then run OLS regressions for each outcome as a function of a gender dummy, a dummy for the later year, the interaction of these two variables as well as controls which can reasonably be considered exogenous: the age in years of the individual and geographic location (the latter standardised between the two waves). The interaction term provides a difference in difference analysis, examining how gender gaps have changed over time.

[Table 7 around here]

The results for the key dummy variables in these regressions are reported in Table 7 (for educational outcomes) and Table 8 (for work outcomes), along with the baseline values for the outcome variables. We have estimated the same regressions without the controls in order to see the raw figures, but the results are very similar to those presented here and so are not shown.

In terms of secondary education, the baseline values are highest in Kenya and Uganda and lowest in Burkina Faso and Tanzania. Over the periods considered there have been substantial improvements over time in Ghana, and quite large improvements in Kenya and Tanzania and smaller though still statistically significant increases in Uganda and Burkina Faso. In the base years significantly more young men had some secondary education in all countries except Ghana and Tanzania; but by the later year the gender gap was eliminated in Kenya and Uganda. These two countries plus Ghana do not have a significant gender gap in this outcome in the latest year; but in the other three countries

the gender gap in this outcome has not fallen and significantly more men than women have some secondary education in the latest year.

Some similar patterns apply to literacy. In all countries rates have increased significantly between the earlier and later year, and the increases have been substantial in terms of Ghana and Uganda in particular. In all countries except Ghana young men were significantly more literate than young women in the earlier year, but again the gap has been eliminated or more than eliminated in Kenya and Uganda as well as Tanzania. Significant gender gaps remain in Burkina Faso and Ethiopia in the latest years. But the general pattern across these countries is of falling gender differentials in educational outcomes over time, some countries are just progressing more quickly than others and/or were more unequal to start with.

[Table 8 around here]

Turning to jobs for those in the 21-29 age range, the baseline figures for those having professional, managerial, technical and clerical jobs are very low everywhere, except Kenya where 11.5% of 21-29 year olds have such jobs. The numbers in these jobs have increased significantly over time in all countries except Burkina Faso and Kenya (where they appear to have fallen significantly), but the increase are small except in the case of Ghana. There is a significant gender differential in favour of men in the base year everywhere except Kenya and Uganda. The gender gap had fallen in Tanzania by the later year, but not anywhere else, and it had actually increased in Burkina Faso.

In all countries, more than one thirds of all 21-29 year olds (including those that did not work) worked in agriculture in the base year, and more than 40% everywhere except Ghana and Kenya. The

numbers having agricultural jobs increased over time in three countries (Burkina Faso, Tanzania and Uganda) but fell in the other three (as seen above). Men were much more likely to do these jobs in the base year everywhere; women have in fact overtaken men by the later year in Kenya and Tanzania, and have significantly narrowed the gap in Burkina Faso and Ghana.

Over time educational outcomes have substantially improved everywhere over the periods considered. The gender gaps have been eliminated, reduced or were never present in four of the countries; only in Burkina Faso and Ethiopia is there a persistent gender gap in educational outcomes. But over the same period there has been substantially less progress in terms of work outcomes. Only really in Ghana and Kenya has there been significant movement out of agricultural and movement into white collar type jobs. But the numbers able to obtain the latter jobs are substantially less than those who potentially could have the required levels of education for these positions. In the other countries there is limited growth in opportunities for educated workers, and in Burkina Faso, Tanzania and Uganda there has been movement of workers into agriculture. Then gender gaps in terms of work outcomes are present and persistent in most countries. In broad terms there is less evidence of females catching up with males in relation to work than is the case for education. Of course this may take more time, but fertility is also a very important factor.

5: Partial correlations via probit regressions.

In this section we explore partial or conditional correlations between the same four key outcome variables and a common set of explanatory variables. The samples are, as before, of young people aged 15 to 29 in our twelve DHS data sets from six countries, but here separating male and female respondents. As before, the two work variables are considered for those aged 21-30 years, while the educational outcomes are analysed for those aged 15-20 years.

The key common correlates considered are: a set of age controls, the gender of the head of household, the number of children aged under five years in the household, a household wealth index discussed above, and whether the young person is married. Early experiments interacted being married with all the other variables. The reason for these interaction terms is, as we have shown, young women in particular mostly get married within the age band we have chosen, indeed many marry in their early 20s. Interaction terms allow young single respondent living at home and a married respondent living in a newly-established household to be included in the same regression without the imposition of common parameters. Of course the estimated parameters, such as the effect of household wealth on occupational choice, may not differ systematically enough for the regressions to pick them up. In the light of that we allowed ourselves some simplification of the specification, eliminating interactions that were clearly uninformative.

[Table 9 around here]

[Table 10 around here]

Results are given in Tables 9, 10, 11 and 12. The initial discussion focusses on the results with respect to six explanatory variables: household size, the number of children aged under five years old present in the household, the gender of the head of the household, being married; a household wealth index and an interaction term between wealth and marriage. There is an issue of how to make generalisations from such a set of results. We take an ad-hoc approach, noting results if there is a clear majority of the same sign, irrespective of statistical significance. There are many more sophisticated approaches, but with the relatively small number of countries involved, we think a formal rule on what to note is unnecessary.

First, household size has no general relationship with occupation, either white collar or agricultural, but household size is perhaps mildly positively related to staying on at school. Next, having young children in the house is mildly negatively related to having a white-collar job, especially for women, but is strongly negatively related to passing a literacy test and to staying on at school to the secondary level, again especially for women. Note we do not report an interaction term between marriage and the presence of children, because the results for this variable were largely insignificant and of variable sign. Thus having children around reduces the chances of a young woman having received a good education and thus a high quality job, irrespective of whether the children are likely to be the respondent's own offspring or those of another female house member.

[Table 11 around here]

[Table 12 around here]

Living in a male-headed household is mildly negatively associated with entering secondary education, but no more so for women than for men, but there is a tendency to find a negative relationship, for women only, between living in a male-headed household and holding a white-collar job.

Now we turn to marital status, household wealth and their interaction. Household wealth is strongly positively related to having entered secondary education and to performing well in the literacy test. It is also clear this wealth effect is larger for men than women, indeed this is true in the vast majority of cases. It is particularly a weaker effect for unmarried women, as married women seem to experience less of a reduction in the wealth effect compared to men. In contrast we find no

systematic difference in wealth effects between single and married men. There are predictable partial correlations between occupations and wealth: positive and strong for white-collar work and negative and strong for agricultural work. It is also notable that a gender gap emerges here too, though not as strongly as for education, but, in most of the six countries the wealth effect, positive for white collar, negative for agriculture work, are stronger for men than for women. Perhaps this result most clearly illustrated the causality issue that should make us cautious about drawing inference. To illustrate, here is a question: is it that a poor household is more likely to send a young man than a young woman into the fields or that a household is more likely to be poorer if it contains male rather than female agricultural workers? Both ways around seem plausible.

Lastly, holding wealth constant, marriage is associated with lower education and literacy and lower chances of a white-collar job. Other messages from the results are harder to come by. It is difficult here to judge changes over time from these results, but we investigate this more in the following section. The main cross-country result we see is the impact of wealth on all four outcomes is larger for Ethiopia than for other countries.

6. Conclusions

Across all the six countries considered here there has been impressive progress in the last 10-20 years in improving educational attendance and attainment, and the gender gaps have been reduced in all countries and are no longer present in four. This has been an impressive achievement; and even if there are legitimate concerns about educational quality, literacy rates have improved significantly. The progress in terms of access to better quality jobs though has been much slower, with only really evidence of much growth in these jobs in Ghana and Kenya. Gender gaps also persistent in relation to work in many countries. In short there has been impressive progress in education but much more

limited progress in relation to jobs – though not none. But the youth employment challenge remains a very serious one.

The presence of young children is associated with lower levels of education, literacy and lower rates of taking white collar jobs for women across these six countries. As far as we can tell this happens irrespective of whether the respondent is married, and thus more likely to be the mother. This result suggests that the traditional caring role of women may lead to decisions that worsen a young women's employment consequences. Of course reverse causality is possible here, with less academically able people choosing to start families earlier, or, at least, those living in places where the benefits of staying on at school are less obvious choosing to start families earlier. But it seems very likely that domestic responsibilities weigh heavily on young women's choices.

There is a strong positive relationship between household wealth and (1) entering secondary education (2) literacy score and (3) obtaining a white-collar job. Of course we must be conscious of the possibility of reverse causality here too, with bright people getting good jobs and building up more assets and so on, but, again, it seems likely that the lower pressure to start work, or get married earlier that comes with family wealth reaps benefits in terms of longer time spent in education, great literacy and more good jobs. The size of this effect is much larger for men, so that young men's life chances seem to improve faster with household wealth. It is also larger for married women compared to unmarried women, perhaps indicating the importance of marrying wealthier spouses for better outcomes; though this not as large as for men, for whom marriage makes no difference. This last result argues against the reverse causality interpretation if marriage for men is a signal of traits that help with getting work, so that the education/wealth relationship should, on that argument, be stronger.

Table 1 Percentage of young women who are married, by age

Country	Age: Year	15	16	17	18	19	20	21	22
Burkina Faso	1998	0.0	9.4	32.6	54.6	70.6	81.0	81.1	91.0
	2010	5.3	10.5	29.1	47.4	64.6	75.1	77.9	79.6
Ethiopia	2000	6.2	16.5	20.0	34.4	40.7	56.0	58.3	60.5
	2011	6.6	11.0	17.4	29.4	40.5	54.5	48.4	61.3
Ghana	1993	2.3	6.3	16.3	32.5	37.8	58.6	57.7	61.5
	2014	0.2	2.3	3.0	7.4	20.0	28.8	26.4	35.7
Kenya	1993	3.1	5.0	10.1	23.9	29.4	45.5	47.2	52.1
	2014	1.2	5.0	9.4	17.5	29.4	39.2	50.1	60.2
Tanzania	1996	3.7	11.0	18.6	32.4	48.3	58.5	64.5	69.0
	2010	2.5	9.8	15.7	26.8	34.0	50.1	53.2	68.0
Uganda	1995	17.7	28.6	43.5	62.6	68.6	72.9	74.3	77.8
	2011	1.0	6.7	22.1	35.0	43.9	60.3	60.1	68.4

Source: Authors' calculation from DHS survey data.

Table 2 Percentage of young women in education, by age

Country	Age: Year	15	16	17	18	19	20	21	22
Burkina Faso	1998	15.6	13.8	11.9	11.6	6.1	8.8	8.5	4.1
	2010	43.8	34.9	26.1	19.9	18.2	13.4	12.2	9.5
Ethiopia	2000	36.5	35.3	33.2	24.9	20.9	12.1	10.6	9.4
	2011	67.2	63.9	57.4	42.2	34.5	22.4	24.6	18.2
Ghana	1993	53.0	43.1	28.1	16.0	11.5	7.1	5.7	5.6
	2014	70.6	58.9	52.8	34.1	21.5	13.0	11.1	9.1
Kenya	1993	79.3	71.1	54.4	34.2	20.8	11.0	11.2	6.4
	2014	88.9	82.2	71.2	51.4	36.6	22.9	16.0	10.3
Tanzania	1996	62.1	41.1	26.1	13.7	7.6	5.7	3.0	2.6
	2010	64.4	53.5	49.4	33.9	25.3	13.3	8.6	5.3
Uganda	1995	45.6	29.9	25.8	14.7	11.4	7.9	6.7	3.8
	2011	83.2	68.6	56.7	35.5	24.5	14.4	14.1	7.3

Source: Authors' calculation from DHS survey data.

Table 3 percentage of married young women in education, by age

Country	Age: Year	15	16	17	18	19	20	21	22
Burkina Faso	1998	0.0	0.0	0.0	0.7	0.0	0.8	0.5	1.4
	2010	0.0	9.1	3.7	3.9	4.0	2.1	1.6	2.8
Ethiopia	2000	0.6	0.3	6.4	5.2	1.7	1.7	0.1	0.6
	2011	24.2	12.9	3.3	5.7	6.7	3.0	5.5	6.6
Ghana	1993	0.0	10.0	0.0	0.0	3.6	0.8	2.8	1.8
	2014	0.0	0.0	0.0	1.5	0.0	3.4	5.3	1.2
Kenya	1993	0.0	0.0	2.3	1.5	0.0	2.0	0.4	3.5
	2014	7.8	1.6	0.9	1.6	3.7	2.9	2.6	4.8
Tanzania	1996	0.0	0.0	1.7	0.0	0.0	3.0	0.4	1.1
	2010	0.0	0.0	2.8	0.0	0.1	0.0	1.1	0.0
Uganda	1995	6.2	2.1	1.4	1.2	0.2	0.6	0.7	0.9
	2011	31.5	1.2	4.8	0.0	0.4	1.9	0.0	1.8

Source: Authors' calculation from DHS survey data.

Table 4 Literacy by gender and occupation: proportion of respondents given the top grade in a literacy test

Country	Year	Women		Men	
		All	White Collar workers	All	White Collar workers
Burkina Faso	1998	0.10	0.97	0.21	0.97
	2010	0.22	0.95	0.32	0.75
Ethiopia	2000	0.25	0.97	0.44	0.94
	2011	0.38	0.97	0.57	0.93
Ghana	1993	0.21	0.75	0.37	0.66
	2014	0.59	0.96	0.70	0.94
Kenya	1993	0.72	0.96	0.89	1.00
	2014	0.84	0.94	0.87	0.96
Tanzania	1996	0.65	0.91	0.76	0.88
	2010	0.70	0.83	0.77	0.97
Uganda	1995	0.37	0.90	0.56	0.89
	2011	0.58	1.00	0.61	0.83

Source: Authors' calculations from DHS survey data.

Table 5 Leaving home and getting married: (1) The youngest age at which at least 50 per cent of young women have moved from family of origin, and (2) the youngest age at which at least 50 per cent of young women are married.

Country	Year	Age (1)	Age (2)
Burkina Faso	1998	18	18
	2010	19	19
Ethiopia	2000	20	20
	2011	20	20
Ghana	1993	20	20
	2014	23	23
Kenya	1993	21	22
	2014	21	21
Tanzania	1996	21	20
	2010	21	20
Uganda	1995	18	18
	2011	20	20

Source: Authors' calculation from DHS survey data.

Table 6 Occupational structure in Ethiopia and Ghana: Percentage shares of 15-29 year-olds.

	2000	2011	2000	2011
	Women	Women	Men	Men
Ethiopia				
still in school	8.6	15.0	10.1	9.0
not working, not in school	30.5	29.9	2.7	1.9
professional, managerial, technical, clerical	1.3	3.3	2.2	4.8
sales	14.6	18.1	4.9	8.9
agriculture	34.1	24.3	74.0	65.8
manual	9.7	7.5	5.4	7.6
others	1.4	1.9	0.7	2.0
all	100	100	100	100
Ghana				
still in school	10.2	13.7	17.2	16.0
not working, not in school	29.3	24.5	18.8	12.7
professional, managerial, technical, clerical	1.6	7.6	6.3	10.6
sales	18.1	28.9	4.5	8.4
agriculture	25.1	12.5	38.3	25.6
manual	12.2	10.9	13.7	25.1
others	3.5	2.0	1.3	1.6
all	100	100	100	100

Source: Author's calculations from DHS surveys.

Table 7: regressions for educational outcomes based on pooled country level data

If individuals have some secondary education

Coefficient	Burkina Faso	Ethiopia	Ghana	Kenya	Tanzania	Uganda
male	0.088***	0.047***	0.044	0.154***	0.020	0.140***
later year	0.085***	-0.01	0.621***	0.268***	0.271***	0.170***
male*later year	0.016	-0.012	-0.011	-0.147***	0.048*	-0.143***
N	8008	13459	4412	10754	6095	5534
r2	0.214	0.264	0.409	0.168	0.224	0.133
Baseline value	0.122	0.127	0.121	0.242	0.064	0.184

Literacy status

Coefficient	Burkina Faso	Ethiopia	Ghana	Kenya	Tanzania	Uganda
male	0.087***	0.164***	0.056	0.098**	0.094***	0.183***
later year	0.141***	0.202***	0.411***	0.115***	0.096***	0.209***
male*later year	0.036	-0.044*	0.027	-0.099**	-0.085**	-0.216***
N	7933	13005	4407	10710	6073	5496
r2	0.23	0.213	0.251	0.06	0.09	0.123
Baseline value	0.151	0.282	0.246	0.782	0.698	0.420

Sample: respondents aged 15-20 years in the DHS survey. The dependent variable takes the value 1 if the respondent at least started secondary education or passes the literacy test and zero if not. Controls include age and regional dummies and household composition variables. ***, ** and * reflect conventional significance at 1%, 5% and 10% levels.

Table 8: regressions for job outcomes based on pooled country level data

If individual has a professional, managerial, technical or clerical (white collar) job

Coefficient	Burkina Faso	Ethiopia	Ghana	Kenya	Tanzania	Uganda
male	0.021**	0.027***	0.057***	-0.032*	0.029***	0.012
later year	0.003	0.028***	0.067***	-0.024*	0.014***	0.024***
male*later year	0.021*	-0.002	0.02	0.053**	-0.018*	-0.022
N	10386	16785	6432	9947	7514	7323
r2	0.055	0.078	0.067	0.019	0.045	0.042
Baseline value	0.015	0.025	0.037	0.115	0.015	0.033

If individual works in agriculture

Coefficient	Burkina Faso	Ethiopia	Ghana	Kenya	Tanzania	Uganda
male	0.296***	0.412***	0.188***	0.061***	0.247***	0.217***
later year	0.167***	-0.106***	-0.108***	-0.076***	0.156***	0.059***
male*later year	-0.219***	0.004	-0.097***	-0.077***	-0.272***	-0.011
N	10554	16874	6432	9953	7742	7323
r2	0.293	0.357	0.298	0.215	0.343	0.199
Baseline value	0.441	0.420	0.354	0.383	0.462	0.486

Sample: respondents aged 21-29 years in the DHS survey. The dependent variable takes the value 1 if the respondent works in a white collar job/agriculture and zero if not. Controls include age and regional dummies and household composition variables. ***, ** and *reflect conventional significance at 1%, 5% and 10% levels.

Table 9. Probit regression coefficients: dependent variable: holds a white-collar job

Country	Year	sex	Household size	no aged<5	Male head	Married	Wealth	Wealth *Married	N
Burkina Faso	1998	W	0.06	-0.45*	-0.63*	-0.36	0.43**	0.80***	1046
		M	-0.30***	0.24	0.68	-0.80	1.21***	0.70*	601
	2010	W	0.01	-0.03	-0.39**	-0.47*	0.14*	0.29***	5369
		M	-0.04*	0.09	-0.15	-0.34	0.24***	0.27*	1756
Ethiopia	2000	W	0.02	-0.39**	-0.21	-0.28	0.86***	0.30**	5069
		M	-0.02	-0.33	0.53*	-0.25	0.99***	0.32	606
	2011	W	-0.05	-0.37**	-0.19	-0.12	0.80***	0.07	5958
		M	-0.09***	0.09	0.21	-0.47*	0.74***	0.18	4563
Ghana	1993	W	-0.12*	0.18	-0.15	-0.60	0.28*	0.12	1106
		M	-0.14**	0.17	0.14	-1.05**	0.38*	-0.13	303
	2014	W	0.02	-0.35***	-0.06	-0.23	0.66***	0.11	3131
		M	-0.01	-0.02	-0.33	-0.68	0.73***	0.52*	1192
Kenya	1993	W	-0.01	-0.06	-0.34*	-0.19	0.41***	0.29**	1458
		M	-0.03	-0.09	-0.26	0.13	0.48***	0.08	901
	2014	W	-0.06**	-0.11	-0.10	-0.67***	0.22***	0.33***	5229
		M	-0.04	0.12	0.00	-0.11	0.34***	-0.02	3898
Tanzania	1996	W	0.06	-0.11	-0.26	0.33	0.30**	0.08	1249
		M	0.11*	-0.32	0.85	0.48	0.24*	0.26	267
	2010	W	-0.05	-0.09	0.02	-0.68	0.71***	0.21	2509
		M	-0.08	0.17	-0.09	-0.87	0.40	0.87	242
Uganda	1995	W	-0.06	-0.01	-0.29*	-0.66**	0.18*	0.16	2852
		M	-0.03	-0.11	0.06	-0.45	0.42***	-0.15	642
	2011	W	-0.03	-0.12	-0.26*	-0.09	0.55***	0.10	3281
		M	-0.04	0.12	-0.12	-0.62	0.80***	0.34	363

Sample: respondents aged 20-29 years in the DHS survey. The dependent variable takes the value 1 if the respondent is working in a professional, managerial, technical or clerical job and zero otherwise. Controls include age and regional dummies and household composition variables. ***, **, and * reflect conventional significance at 1%, 5% and 10% levels.

Table 10: Selected Probit regression coefficients: Dependent variable: works in agriculture

Country	Year	sex	Household size	no aged<5	Male head	Married	Wealth	Wealth *Married	N
Burkina Faso	1998	W	0.00	0.07	0.32	0.20	-0.41*	-0.17	2209
		M	-0.03	0.13	0.02	0.41	-1.16***	0.41	794
	2010	W	0.03	-0.02	0.06	0.37	-0.55*	-0.13	6185
		M	0.02	0.13	0.31	0.21	-1.03***	-0.39	1936
Ethiopia	2000	W	0.02	0.04	-0.03	0.17	-0.56***	-0.48*	5284
		M	0.10*	-0.07	-0.77**	0.18	-0.89**	-1.61*	762
	2011	W	0.02	-0.09	-0.05	0.25	-0.65***	-0.271*	5889
		M	-0.01	0.04	0.11	0.05	-1.03***	-0.667**	4604
Ghana	1993	W	-0.07	0.26*	0.38***	0.15	-0.93***	0.00	1431
		M	-0.03	0.24	0.33	0.34	-1.73***	0.27	357
	2014	W	0.02	0.04	0.253*	0.427*	-0.81***	-0.27	2974
		M	0.01	-0.03	0.03	0.31	-1.29***	-0.29	1078
Kenya	1993	W	-0.02	-0.12	0.24*	0.42	-0.43***	-0.02	1381
		M	-0.02	0.05	0.04	0.08	-0.37***	-0.04	767
	2014	W	0.03	0.07	0.11	0.74***	-0.44***	0.14	5236
		M	0.06***	-0.18**	0.08	-0.10	-0.19***	-0.17	3898
Tanzania	1996	W	-0.01	0.03	-0.03	0.00	-0.38***	0.26**	3090
		M	-0.01	0.10	-0.15	0.03	-0.77***	-0.29	618
	2010	W	0.05*	0.13*	0.22*	0.68***	-0.58***	-0.35**	3346
		M	0.04	0.01	0.01	0.43	-0.28*	-0.47*	708
Uganda	1995	W	-0.05	0.16*	0.09	0.09	-0.23	-0.37*	2852
		M	-0.18	0.14	0.00	-0.961*	-0.66	-1.55*	723
	2011	W	0.00	0.12*	0.27***	0.13	-0.23***	-0.37***	3281
		M	0.02	-0.03	0.11	-0.17	-0.41***	-0.19	705

Sample: respondents aged 21-29 years in the DHS survey. The dependent variable takes the value 1 if the respondent works in agriculture and zero if not. Controls include age and regional dummies and household composition variables. ***, ** and *reflect conventional significance at 1%, 5% and 10% levels.

Table 11 Selected Probit regression coefficients: Dependent variable: passes a literacy test

Country	Year	sex	Househ old size	no aged<5	Male head	Married	Wealth	Wealth* Married	N
Burkina Faso	1998	W	0.00	-0.08	-0.24	-0.94***	0.21**	0.11	1769
		M	-0.02	-0.12	-0.15	(omitted)	0.47***	(omitted)	694
	2010	W	0.02*	-0.13***	-0.18*	-0.92***	0.02	0.27***	4081
		M	0.00	-0.03	-0.17	-0.23	0.40***	0.79	1707
Ethiopia	2000	W	0.04*	-0.16**	-0.20*	-0.31	0.57***	0.36**	4093
		M	0.006	-0.15	0.24	2.74*	0.72**	-1.70	636
	2011	W	0.014	-0.15**	0.04	-0.59***	0.33***	0.55***	4579
		M	-0.01	-0.07	0.06	-0.45	0.53***	0.10	3415
Ghana	1993	W	0.01	-0.26***	0.00	-1.35***	0.14*	-0.02	957
		M	0.04	-0.23	0.13	-2.73**	0.40**	1.4	243
	2014	W	-0.01	-0.18***	0.03	-0.92**	0.34***	0.14	2067
		M	-0.02	0.01	0.06	9.02	0.56***	23.71	1053
Kenya	1993	W	0.04*	-0.14**	-0.07	-0.56**	0.16**	0.38***	2201
		M	0.07	0.03	0.02	22.67	0.02	-24.6	107
	2014	W	0.04*	-0.19***	0.00	-0.62***	0.20***	0.42**	7268
		M	-0.03	-0.023	0.12	0.07	0.52***	0.33	3283
Tanzania	1996	W	0.04**	-0.14**	-0.06	-0.17	0.22**	0.17	2088
		M	0.03	-0.09	0.32	1.89	0.30**	8.30**	545
	2010	W	0.02	-0.12*	-0.01	-0.61***	0.34***	0.08	2545
		M	0.01	-0.13	0.04	-2.60**	0.74***	0.19	677
Uganda	1995	W	0.02	-0.10*	-0.08	-0.43**	0.19***	0.32**	2014
		M	0.06*	-0.02	-0.13	0.15	0.23	-0.22	457
	2011	W	0.03	-0.13**	-0.19*	-0.37	0.12	0.36**	2370
		M	0.04	-0.12	0.13	-0.43	0.43***	0.17	631

Sample: respondents aged 15-20 years in the DHS survey. The dependent variable takes the value 1 if the respondent is the highest grade in literacy test, zero otherwise. Controls include age and regional dummies and household composition variables. ***, ** and *reflect conventional significance at 1%, 5% and 10% levels.

Table 12 Selected Probit regression coefficients: Dependent variable: has some secondary education

Country	Year	sex	Household size	no aged<5	Male head	Married	Wealth	Wealth* Married	N
Burkina Faso	1998	W	0.02	-0.17**	-0.22	-0.86*	0.24***	0.19	1563
		M	-0.02	-0.12	-0.27	..	0.54***	..	695
	2010	W	0.03**	-0.16***	-0.19*	-0.99***	0.07*	0.27***	4127
		M	-0.01	-0.03	-0.16	-0.07	0.40***	1.35*	1741
Ethiopia	2000	W	0.02	-0.31***	-0.22*	-0.48	0.67***	0.32*	4037
		M	0.06	-0.16	-0.08	..	0.87***	..	625
	2011	W	0.02	-0.36***	-0.06	-0.63**	0.33***	0.23*	4682
		M	-0.01	-0.16*	0.00	-0.61	0.63***	-0.26	3557
Ghana	1993	W	-0.05	-0.09	0.14	-1.14**	0.26***	-0.04	957
		M	0.12*	-0.10	-0.15	..	0.48**	..	163
	2014	W	0.00	-0.20***	0.08	-0.515*	0.24**	0.42**	2071
		M	-0.01	-0.02	0.18	8.29	0.74***	22.59	1054
Kenya	1993	W	0.03	-0.14**	-0.12	-0.37	0.27***	0.07	2208
		M	0.14*	-0.11	-0.07	0.82	0.12	0.25	123
	2014	W	0.03*	-0.27***	0.03	-0.80***	0.29***	0.28**	7303
		M	-0.02	-0.07	-0.02	-1.83**	0.61***	-1.27*	3291
Tanzania	1996	W	0.04	-0.25***	-0.33**	-0.22	0.27***	0.32**	1586
		M	0.06	-0.23	-0.12	..	0.46***	..	322
	2010	W	0.04*	-0.22***	-0.18*	-1.36***	0.25***	0.07	2592
		M	0.03	-0.33***	-0.17	-2.03	0.59***	0.07	752
Uganda	1995	W	0.05**	-0.147*	-0.09	-0.56**	0.19***	0.291**	2015
		M	0.06*	-0.07	-0.29	0.19	0.36***	0.40	459
	2011	W	0.03	-0.16***	-0.22**	-0.59**	0.27***	0.27*	2416
		M	0.04	-0.14	-0.05	-0.34	0.41***	0.32	643

Sample: respondents aged 15-20 years in the DHS survey. The dependent variable takes the value 1 if the respondent at least started secondary education and zero if not. Controls include age and regional dummies and household composition variables. ***, ** and *reflect conventional significance at 1%, 5% and 10% levels.

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ⁱ While the ILO's School to Work Transition Survey (Elder, 2009), which has sought to collect information on the key variables of relevance to this transition, might have been a suitable source for such an analysis, this was only conducted in one of our focus countries (Uganda).