

博士論文審査結果報告  
Doctoral Dissertation Defense Results

審査委員会を代表し、以下のとおり、当該学生が博士論文審査に合格したことを報告します。  
On behalf of the Examination Committee, I am pleased to report that the student indicated below has successfully defended her/his dissertation.

政策研究大学院大学 教授 山内 慎子  
Professor YAMAUCHI Chikako, National Graduate Institute for Policy Studies

プログラム名 Program	政策分析プログラム Policy Analysis Program	
学位申請者氏名 (学籍番号) Name of the Candidate (ID)	Ms. YIGERMAL Moges Endalamaw (PHD21306)	
論文タイトル/ Dissertation Title	Essays on Investment in Tertiary Education, Labor Market, and Women Marital Outcomes	
(和訳/ English Translation)	(エチオピアにおける高等教育投資が職業選択・結婚・出産に与える影響)	
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## 1. 論文概要と判定理由

### 1. Summary of the Dissertation and the Committee's Evaluation

Following the momentum created by the Millennium Development Goals and Sustainable Development Goals, which have been advocating universal primary and secondary education, many developing countries have invested in their educational sectors. This public investment started with the aim of increasing the enrolment rates at the primary level first, and then secondary level later. As those cohorts that benefited from these investments grew up, there have been significant investments in the tertiary education sector. However, the evidence on the returns to this level of education is relatively limited compared to the relatively rich evidence on the returns to primary and secondary education.

Ethiopia is one of the countries that have invested significantly to expand tertiary education. Between 1999 and 2017, the government established over 40 new public universities across different regions in the country. Following these university openings, access to tertiary education has significantly improved, which resulted in a surge in university enrollment. This dissertation utilizes the expansion of higher education to explore the effects of increased access to university education on various labor market outcomes, fertility, and marital outcomes. The results suggest that cohorts benefiting from the tertiary education investment show both an increase in the chance of completing university education and obtaining a job, particularly a paid job. It is also found that women exposed to better access to university are more likely to make decisions over their marriage, and delay marriage as well as child-bearing, resulting in lower age-specific fertility up to age 30.

The committee members had many useful comments that need to be addressed in the final draft of the dissertation. They were mainly related to the issues in the methodology used, difficulty understanding the explanation of the current methodology, and inadequate elaboration of own contributions. The candidate has addressed the comments, which are described below, and the committee members considered that the final draft of the dissertation is satisfactory for him to receive the Ph.D. degree.

## 2. 論文の内容（手法や結論など）と学術的貢献

### 2. The Dissertation's Findings, Methodologies, and its Academic Contribution

The dissertation includes two main chapters. In the first part of the dissertation, the candidate examines the impact of the Ethiopian higher education expansion (HEE) on university education attainment and labor market outcomes. The candidate exploits the expansion-induced kink, or structural break, in enrollment in 2002 to identify the causal effects of tertiary education on labor market outcomes. Using the Ethiopian Urban Employment Unemployment Survey (EUEUS), cohorts who were aged for tertiary education (20 years old and younger) in 2002 when the enrolment surge started, were compared to the older birth cohorts in terms of the probability of completing university education.

The results exhibit a significantly steeper growth in the probability among the younger cohorts,

compared to the trend observed for the older birth cohorts, which is approximately flat. This suggests that the university expansion has significantly increased university completion. Similarly, the impact on the labor market outcomes such as the probability of being at work, as well as the types of jobs conditional on being at work is examined. The results suggest the completion of university education has resulted in better labor market outcomes. At the extensive margin, individuals with a university education were more likely to be in the labor force, and those in the labor force were more likely to be in paid employment. This effect is mainly driven by an increased chance of public sector employment. The public sector in Ethiopia remains a major employer of highly skilled workers, partly due to the underdeveloped private sector and the nature of economic growth, which has primarily been driven by public infrastructure investment.

In the second part, the candidate used the Ethiopian Demographic and Health Survey (EDHS) to examine the impact of a university opening nearby on fertility and other female marital outcomes. Since the EDHS provides the information on the location of sample communities, the candidate explores two sources of variation in the identification strategy: proximity to a nearby university opening (distance from a nearby university) and age at the time a university first became available nearby. Changes in these two aspects enable the candidate to utilize the difference-in-differences method for the identification of the effects of access to university on fertility and marital outcomes. More specifically, women who lived in a community in which a university is available within 20 km are considered to be exposed to improved access to university, and birth cohorts that were age 20 or younger when a university became available within that range are also considered to benefit from better access to university. The robustness of the results is checked against using slightly different thresholds in terms of the distance to the nearest university and the birth cohort.

The results show that women who were exposed to the availability of a university within 20 km by age 20 are two percentage points more likely to complete university education compared to the older cohorts, and this increase is net of average changes across cohorts in the probability of university completion observed in communities that did not experience any improvement in access to university. The results also indicate that these women have 0.37 fewer childbirths by age 30 compared to nonexposed women. This accounts for a 12% reduction compared to the mean number of child births by that age. Similar effects are found for fertility by ages 18 through 30, with the effect becoming increasingly negative with age. These fertility effects are likely to be attributed to a delay in marriage, first childbirth and an increased female decision-making power over marriage because university opening is found to delay the probability of first marriage as well as first childbirth by a certain age up to age 30. Regarding female empowerment, the question is used on whether a woman participates in decision-making, including when and whom to marry. Since the common practice in Ethiopia is that parents decide over their children marriage, an increase in the probability for women of deciding on their own marriage indicates one of the aspects of their empowerment.

These findings have implications for the roles that tertiary education attainment plays in human capital accumulation and women empowerment. It suggests that reforms that improve access to tertiary education significantly improves human capital and strengthens social status of women. This is particularly

important in a developing country like Ethiopia, where gross enrollment in tertiary education remains very low (barely 10% in 2023).

This dissertation contributes to the existing literature on higher education reforms in developing countries, where research is relatively limited. Specifically, it contributes to the debate on graduate unemployment in Ethiopia, a concern that has arisen following the expansion of higher education. It has been worried that there was not enough preparation from the government side to deal with the consequences of the HEE on unemployment among university graduates, and the economy was not capable of absorbing the increased number of those graduates. Despite widespread coverage in local media, however, empirical evidence is very limited that higher education expansion has led to graduate unemployment. It also contributes to the literature on the impact of female education on fertility and other marital outcomes, which has been focusing on the effects of primary and secondary education. Two recent studies that have studied the impact of tertiary education on female outcomes have shown that university openings in a woman's province in Egypt increased the probability of her tertiary completion, delayed child-rearing and reduced fertility. Policy promoting tertiary education in India is also shown to have increased female tertiary education and reduced fertility in those districts. This research provides an additional piece of evidence from a low-income setting on the impact of proximity to a nearby university.

### 3. 審査員からの主要コメントおよび修正内容

### 3. Comments by the Examiners and the Revisions Made

The committee members provided many useful comments including the issues related to methodology, interpretation, explanation and writing style. Regarding methodological issues, first, it was suggested not to assume that the error term is independently distributed across cohorts because this assumption requires that there are at least 50 cohorts, while the analysis contains around 10 cohorts. The robustness of the results against dropping this assumption has been checked. Second, since the first stage results in the instrumental variables method is a little weak, it was suggested to focus on the reduced-form results, rather than emphasizing the instrumental variables results. The revised draft has been revised accordingly. Third, it was suggested to discuss other factors that could lead to a slope change over the analysis period, such as the demand for tertiary education that started to increase from 2002. The revised draft has strengthened this line of discussion. Fourth it was suggested to add the analysis of some pre-determined variables such as the indicator for religion and demonstrate that they do not have a structural break around the cohorts that were aged 20 in 2002. This analysis has been added.

In the literature review and background sections, it was suggested to drop the discussion of less related theories and less relevant institutional information, while strengthening the discussion of the contribution of the dissertation. Also, in the methodology section, it was suggested to add a more explanation

on how the bandwidth works for the estimation, why 2002 was chosen as the year of structural break, and reasons behind the migration analysis. Further, it was advised to pay more attention to the consistency between the two main chapters. The dissertation has been revised accordingly.