Report

Closing *the* Gender Gap *in* Education *and* Employment

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Acknowledgments

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Andrew Myburgh of IFC and Hiromichi Katayama of UNESCO were the lead authors. Working team members from UNESCO included Mattia Olivari, Allegra Colombino, and Chiara Burastero, and from IFC included Dina Nicholas, Bertrand Momo, Sanola Alexia Daley, David Mena, and Geoffrey Sanzenbacher. IFC's Partnerships team, represented by Morten Lykke Lauridsen and Charlotte Portes, facilitated the joint work as part of the broader UNESCO-IFC partnership.

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Foreword

Globally, women now account for the majority of students in tertiary education: according to UNESCO, there are 113 women enrolled for every 100 men.[1] This represents a significant achievement, considering that women have not benefited from the same opportunities as men to acquire an education, progress in their career, or realize their full potential.[2] [3]

But the story does not end there. Once men and women enter the workforce, gender disparities stubbornly persist in key metrics such as labor force participation, unemployment, and pay.[4] Ensuring that the progress made on gender parity in access to education translates into gender equity in labor market outcomes is a major challenge that requires commitments and partnership among diverse stakeholders. It is in this spirit that this report is written, in partnership between the International Finance Corporation (IFC), a member of the World Bank Group, and UNESCO, the United Nations Educational, Scientific and Cultural Organization—both institutions with a deep knowledge of tertiary education.

The report provides a detailed diagnosis of the problem and outlines practical solutions to address it. It presents original research that pinpoints with actionable granularity where these disparities are greatest and how they can be reduced. This project has its origins in a survey that IFC conducted in partnership with 54 educational institutions in 22 developing countries as part of Vitae. Through this program, IFC is advising and assisting colleges and universities in enhancing their students' employability skills and facilitates their transition to the job market.

Among the report's key findings is a confirmation that gender disparities remain, both in terms of employment rates and earnings levels—and that they persist across a range of professional fields. In addition, the gaps tend to widen for older graduates, possibly due to women shouldering a larger share of care work for children and the elderly. For instance, the analysis revealed that recent women graduates are, on average, 30 percent more likely than their male counterparts to report that they are in the two lowest earning categories, and 50 percent less likely to be in the top two earning categories. This research has a particular focus on the employability of women

graduates in low- and middle-income countries, and outlines the role that tertiary education institutions, employers, and governments can play in reducing these disparities.

IFC and UNESCO are strengthening their partnership to collaborate in delivering sustainable and inclusive development, a commitment that both institutions share. Enhancing women's employability is an important part of advancing this agenda. UNESCO leads the Global Education Coalition, a network of over 200 institutional partners united by a common goal: to advance inclusive and equitable quality education.[5] IFC is a member of the coalition and this report is a contribution to its knowledge library. The partnership between IFC and UNESCO reflects the importance of working together to build global knowledge and demonstrates how leveraging the comparative advantages of diverse institutions can create the greatest impact.

The insights, knowledge, and data generated by this research at the intersection of gender, tertiary education, and employability provide a nuanced exploration of graduate employability and gender. Women make up half of the world's population, and in many countries form the majority of higher education enrollments. Without taking concrete action to improve their employability, their full participation in the labor force—and thus sustainable and inclusive development—will not be possible.

There are clear social and economic benefits to closing gender gaps in labor markets. The World Bank has estimated that eliminating women's participation gap in the workforce by 2034 could double the global growth rate. Based on the insights of this joint study, we underscore that women's transition from school to work warrants greater attention, and we illuminate pathways for how this can be done. Data-driven policies and actions in the education space are essential to reach the ambitions of the UN Sustainable Development Goals, in particular Goal 5, which aims to "achieve gender equality and empower all women and girls." It is only through strong partnerships that we can attain that goal.

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Executive Summary

Since the early 2000s, the number of women in tertiary education has increased significantly. According to data from the UNESCO Institute for Statistics, women now outnumber men in tertiary education enrollment across much of the world. In 2022, women's gross tertiary enrollment rate was 45 percent compared to 39 percent for men.[6] However, gender disparities in enrollments persist, with women underrepresented in many fields of study that correlate to high-paying jobs and—after entering the labor market—tending to be concentrated in certain, often lower-paying, fields that nevertheless require a tertiary credential. For example, women are underrepresented in tertiary education enrollment in certain science, technology, engineering, and mathematics (STEM) fields.[7]

This report compares how recent female and male graduates do in the labor market, using results from a series of graduate surveys conducted by IFC. These surveys measure the employment and wage outcomes of over 14,000 graduates at tertiary education institutions ("education institutions") in Africa, Asia, Latin America, and the Middle East. This unique data on the experience of graduates was captured as part of the Vitae program through which IFC advises education institutions on strategies to increase their graduates' employability and facilitate their transition to the labor market. The survey responses from the Vitae clients were analyzed with the goal of understanding whether female graduates from these institutions earn less than male graduates with similar backgrounds? Are female graduates more likely to be unemployed than similar male graduates? Is there a link between a graduate's gender and the probability of their being employed in the field they studied?

The study identifies an earnings gap, with female graduates tending to earn less than men. This is true even if the woman studied in the same field, at the same institution, is the same age, and graduated in the same year. The gap in earnings between male and female graduates is particularly notable in high-paying STEM fields such as engineering where female graduates are close to 27 percent less likely to be in a high-earning category, even after considering factors such as the graduate's age and the institution they attended. The large gap between male and female engineering graduates means that a female engineering graduate will

tend to earn less than a male who graduated from a lower-paying field of study such as social sciences. This finding—that women who enter STEM fields tend to earn less than men in non-STEM fields—warrants further exploration.

The earnings gap between male and female graduates is greater among people who are older when they graduate. A female graduate in her early twenties is three percentage points less likely to be in a high-earning job than a similar male graduate. This gap increases to 12 percentage points for graduates between the age of 31 and 45. These results suggest that older women who have recently graduated face unique challenges. Career disruption is likely an important factor here as older women face greater demands from family, including caregiving for children or elderly parents.

Women find it more difficult than men to find a job after graduation. Female graduates in their early 20s, for example, are around 8 percent more likely to be unemployed than similar male graduates. This result was accentuated for older graduates, where recent female graduates in their 30s and early 40s are almost 30 percent more likely to be unemployed than similar men. This result does not reflect a lack of interest in employment by female graduates. Indeed, more than 95 percent of respondents to the surveys were either working or actively looking for employment, and relatively few female or male graduates were in part-time employment. Overall, the findings demonstrate that women have less favorable employment and income outcomes than men when transitioning from university to work. This suggests improving employment outcomes for female graduates demands urgent attention.

Educational institutions stand to benefit by improving employment outcomes for their female graduates. The Vitae survey data shows that graduates are more likely to recommend an institution to others when they have better employment outcomes. Ninety-four percent of female graduates reported that getting a good job was "very important" or "extremely important" to their decision to enroll in their program. Consistent with the high priority that students place on earnings, students were 20 percent more likely to claim that the benefits of their education outweighed the costs when they were in the highest earning category, and higher-earning graduates were also more likely to recommend the institution to others.

To improve the employment outcomes of female graduates, educational institutions need commitment from their senior executive and academic leadership. This leadership ensures that any measures taken will translate into sustainable and impactful results. Institutions should start by gathering data. This includes collecting and analyzing data on graduate employment outcomes by program and disaggregating the data by gender to identify disparities. Relatively few institutions in emerging markets systematically collect and analyze data on their students and graduates. Yet without good data, it is not possible to make evidence-based decisions or understand the relevance of current curriculum to labor market needs (IFC's Vitae website provides background and guidance on the activities underpinning the implementation of a high-quality tracer study process). Second, institutions should introduce gender-responsive career support as they move toward individualized services and introduce tech-based career support solutions.

Finally, institutions should leverage career resources and guidance to counter gender-based biases and misconceptions. The report details some specific real-world examples of educational institutions in emerging markets working to close gender gaps through such actions as salary negotiation training tailored to female students and mentorship programs.

Employers can achieve increased profitability and growth by pro-actively working to close gender disparities among their workers. Ultimately, decisions regarding recruitment, hiring, promotion, and retention lie with employers. Employers can help close the gender gap by conducting gender assessments and audits to understand gender dynamics in their talent management strategy and how company practices, policies, and programs either help or hinder achievement of gender equity in the workplace. They can hire, retain, and promote more women through gender-responsive employment policies, career development programs, and family-friendly work arrangements. UNESCO and Dior's WOMEN@DIOR Education & Mentoring Program is an example of an employer actively working to enhance female employability (see Box 6).

Governments have a critical role to play in helping reduce gender disparities in the labor market. This involves taking a whole government approach, including interventions in education, labor markets, and social protection. There are large benefits to be reaped from increasing women's labor market participation rate. The World Bank's Women, Business and the Law data hub reports that closing women's participation gaps in the workforce through employment and entrepreneurship could increase global Gross Domestic Product by 20 percent, while eliminating the gap by 2034 could double the global growth rate.[8] Governments can implement gender-responsive education programming, behavioral change campaigns to address relevant societal norms and biases, and social protection programs.

A concerted effort is needed to enable women to successfully transition from education to employment. From better preparing women to transition into the labor market through improved skills and information to ensuring women are entering workplaces that are equitable, educational institutions, employers, and governments each have an important role to play in ensuring a successful transition.

This report is structured in three parts. **Section I** describes the current tertiary education trends across countries, as well as gender gaps in employment outcomes, including labor market participation, unemployment rates, and average earnings. **Section II** presents the key findings of the gender and employability-focused analysis of the graduate surveys undertaken through IFC's Vitae employability advisory program. **Section III** provides recommendations for tertiary education institutions, employers, and governments on how to reduce and close the gender gap in employment outcomes.

The methodology used, as well as the data and its limitations, is discussed in **Box 2** and in more detail in **Annex A** and **B**.

1

Trends in Education, Employability, and Gender

This report utilizes insights, knowledge, and data generated from IFC and UNESCO's work at the intersection of gender, tertiary education, and employability to provide a nuanced exploration of graduate employability by gender. It is informed by graduate tracer surveys with responses from over 14,000 graduates from 54 tertiary education institutions across the world, with a focus on developing markets in Africa, Asia, and Latin America (see Figure 1). IFC undertook the surveys as part of its Vitae employability advisory program (see Box 5). An analysis of the survey responses offers fresh insights on gender disparities in employment outcomes in lower- and middle-income countries.

Post-secondary education institutions have diverse offerings, increasing employability through different pathways. Post-secondary education encompasses all forms of education pursued after completing secondary level,[9] including tertiary education, typically associated with universities, colleges, and technical and vocational education and training (TVET) institutions.[10] The role that post-secondary education has in increasing employability can differ by country. Across low- and middle-income countries, TVET plays a prominent role in enhancing employability by skilling, upskilling, and reskilling workers.[11] In this context, the targeted nature of TVET can be especially valuable for equipping women with the skills needed to better connect to labor market opportunities, such as higher-paying, formal sector jobs.[12]

Tertiary education institutions (TEIs), employers, and governments all benefit from addressing the gender employability gap

Reducing gender gaps in labor markets can yield tangible benefits for firms, TEIs, and the economy at large. For TEIs, positive employment

outcomes for women and men can boost reputation, contribute to higher rankings, and strengthen graduates' satisfaction with the education they received. Furthermore, maintaining good employment outcomes is important as there is increasing pressure for TEIs to publicly report employment outcomes. Employers, on their part, can achieve improved productivity, profitability, and growth by closing gender gaps in their workforce. Additionally, governments stand to gain from increased female participation in the labor market by harnessing the benefits of women's productive power.

The gender gap in education enrollment has declined significantly in recent decades. Across the world, school enrollment has improved dramatically, especially for women and girls.[13] Since 1995, the number of women enrolled in tertiary education has tripled, from 38 million to 116 million.[14] According to the UNESCO Institute for Statistics, the tertiary gross enrollment ratio, a measure of what share of the school-age population is actually attending school, has improved for every region in the last two decades.[15] This ratio is higher for women than men in every region but Sub-Saharan Africa. In Latin America and the Caribbean, there is a dramatic difference in this ratio between men and women, with about 130 women enrolled in tertiary education for every 100 men.[16]

The term "Female Advantage" has been used to describe the reversal in tertiary enrollment and completion.[17] For example, according to UNESCO, in Mexico women's tertiary graduation rates have nearly doubled, from 16.3 percent in 2001 to 31.8 percent in 2021.[18] In certain countries, this paradigm shift has been observed not only for tertiary education but for post-secondary education more broadly (including TVET).[19] There has been a substantial increase in women enrolled in tertiary education across all regions apart from Central Asia, Southern Asia, and Sub-Saharan Africa.[20] Additionally, women undergraduate students are more likely to graduate than men.[21]

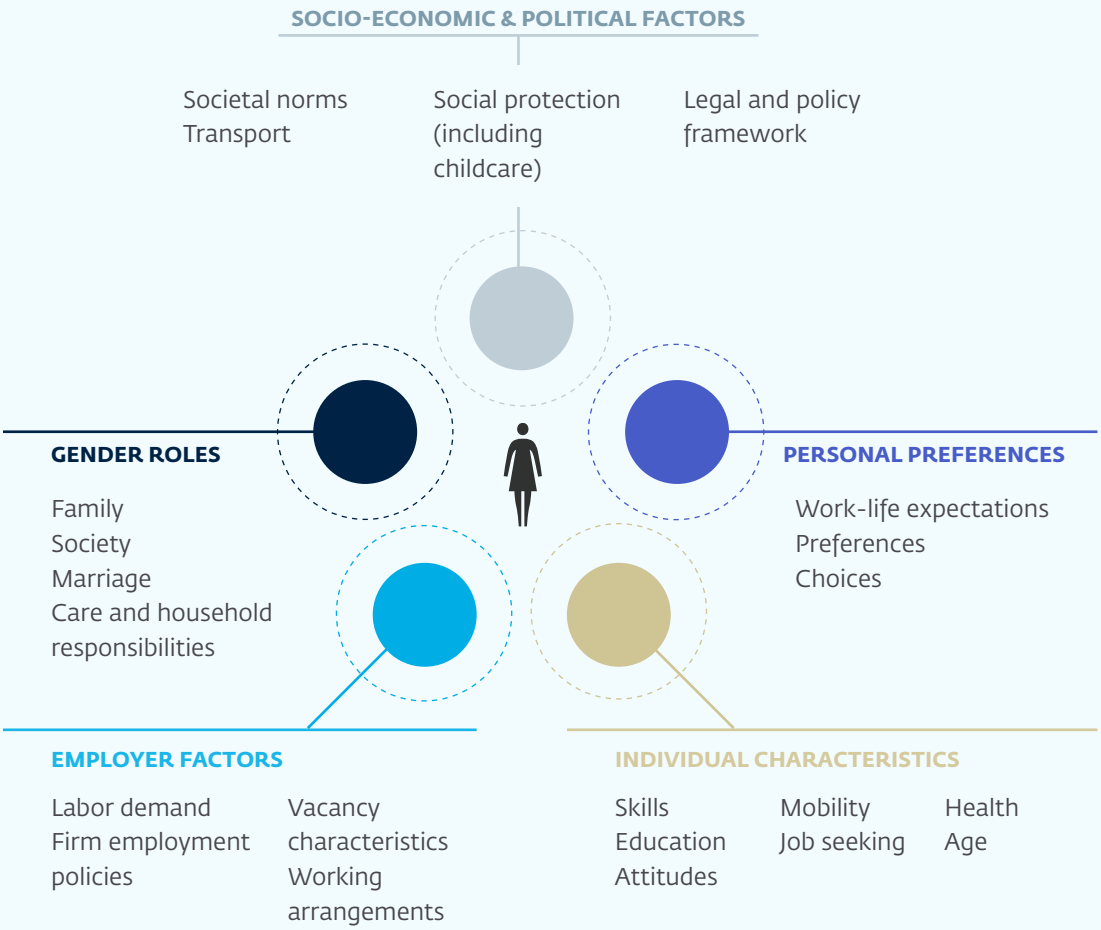
Despite this, gender disparities still exist. Women continue to be concentrated in certain, often lower-paying, fields.[22] As discussed in UNESCO's 2020 Global Education Monitoring Report, globally, women are over-represented in fields like healthcare and education and underrepresented in fields like engineering and science.[23] Women comprise less than 35 percent of tertiary graduates in engineering and information and communication technologies.[24] Gender gaps persist in employment outcomes on key metrics such as labor force participation, unemployment levels, and wages.[25] [26] Despite women now comprising a majority of tertiary education graduates, the employment rate is generally higher for young male graduates than for young female graduates.[27]

BOX 1

Defining Employability Holistically

The varied nature of influences on female labor force participation, employment, and pay reflects a wider trend of redefining employability. The concept has evolved from being centered on the supply and demand of skills, to a more integrated perspective, encompassing individual characteristics, personal preferences, societal norms, labor market conditions, and other mediating factors.* Simultaneously, there has been a shift from a singular focus on finding a job to emphasizing performance throughout one's working life. Employability, per the International Labour Organization, is thus the "ability to secure and retain a job, progress at work, cope with change, secure another job if desired or in case of layoff, and enter the labor market more easily at different stages of the life cycle."** These transformations carry significant implications for addressing gender gaps in labor markets, necessitating interventions that carefully examine the interplay between individual skills and various factors across the lifecycle of workers.

A Framework for Understanding Women's Employability



Source: Ronald McQuaid and Colin Lindsay 2005 "The Concept of Employability" Urban Studies, Vol. 42, No. 2, 197–219, February 2005. World Employment and Social Outlook: Trends for women 2017 International Labour Office—eneva: ILO, 2017

* UN Women. UN SWAP 2.0: UN strategic planning and gender equality and the empowerment of women: guidance. 2020.

** UNESCO. UNESCO Science Report: the race against time for smarter development. 2021.

2

Analysis of the IFC Vitae Survey of Graduates

This section analyzes the Vitae surveys that IFC has conducted with tertiary education institutions worldwide.

The surveys were analyzed with the goal of answering key questions, notably:

- Do female graduates from these institutions earn less than otherwise similar male graduates?
- Are female graduates more likely to be unemployed than similar male graduates?
- Are there gender differences in graduates' probability of being employed in their field of study?

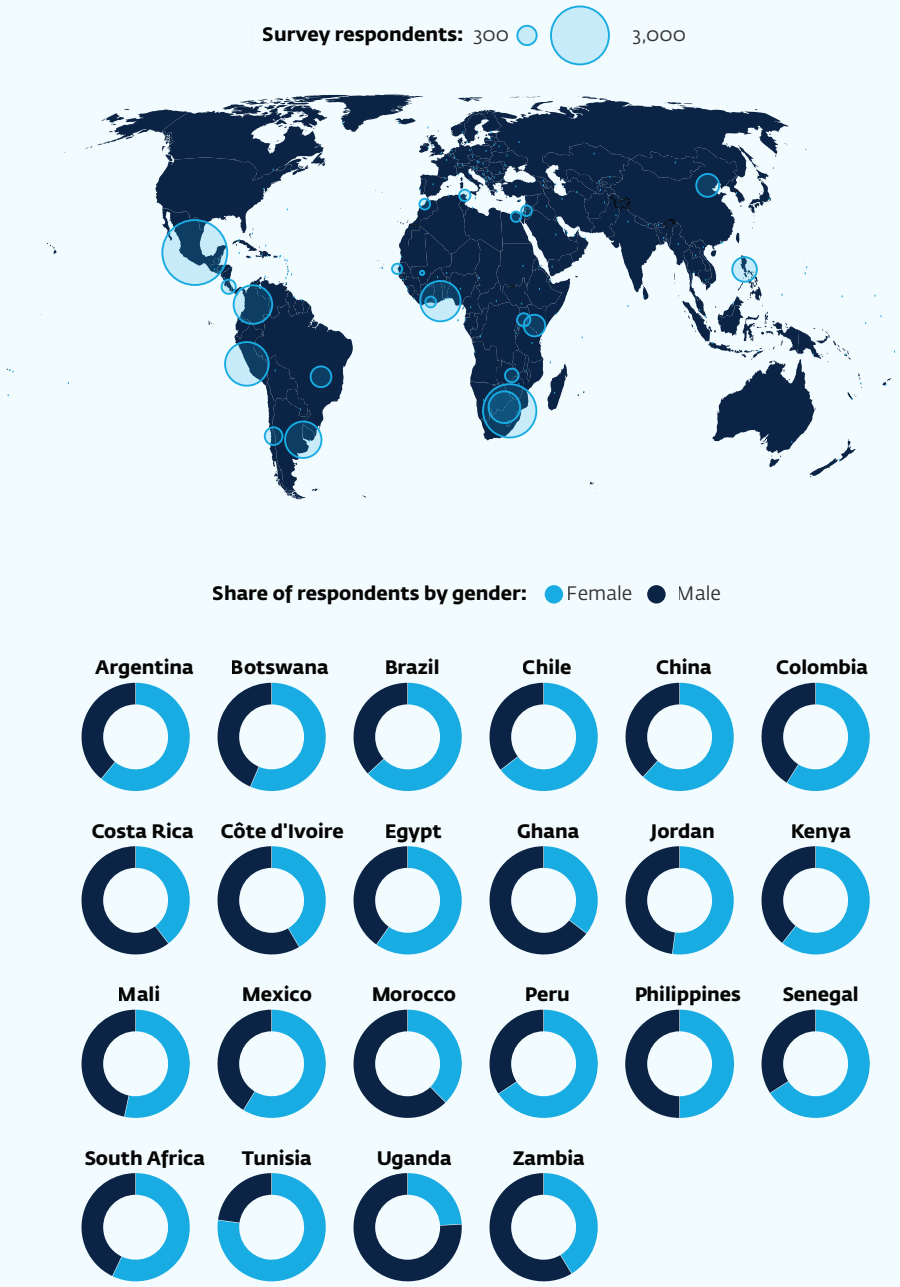
The surveys were done as part of Vitae, the employability advisory program IFC offers to its partner universities and TVET institutions in developing countries (www.vitaeready.org). The Vitae platform helps higher education institutions equip students with the knowledge and skills they need to transition to the job market by sharing proven techniques and practices that improve student employability. As part of the Vitae assessment process, participant institutions email a link to a standard survey to all graduates who completed studies in the past three years. Thus, the surveys collect data only from recent graduates of degree and diploma programs. The responses are collected and aggregated in a third-party online survey platform.

The survey was conducted in 22 countries at 54 institutions where the IFC provided the Vitae advisory program on employability. Most institutions and respondents were in Africa and Latin America and the Caribbean, with fewer surveys conducted in the Middle East and North Africa and in East Asia (see Figure 1 and Appendix for further details).

FIGURE 1

Vitae Survey Respondents—by Country and Gender

14,000+ tertiary education graduates from all developing regions responded



Source: IFC analysis of Vitae survey results

BOX 2

Survey Analysis Methodology

The Vitae survey results were analyzed with respect to earnings, employment status, and whether someone found work in their field of study. Specifically, the study explored: 1) what graduates earned on a country-specific scale from 1 (lowest) to 5 (highest); 2) whether they were unemployed, working part time, or full time; and 3) whether they were employed in their field of study, in a related field, or outside their field of study.

Statistical techniques were used to compare these outcomes between females and males who were otherwise similar along a variety of measures. For example, how do earnings outcomes for women and men who are of a similar age, graduating in a similar field of study, and with a similar family background compare? To the extent that gaps remain even after accounting for these differences, it would suggest that tertiary education does not eliminate gender inequality even for otherwise similar men and women graduating from these institutions. In some of the analyses, the effects of certain characteristics are allowed to differ between men and women. For example, do certain fields of study have a smaller gender earnings gap than others? This analysis is presented in detail in Table A4 of the Annex and focuses on two sets of surveys. The analyses in columns II and IV include variables from a more limited survey asked to the full sample of respondents. The analyses in columns I, III, and V are from a narrower set of institutions where the survey included questions on graduates' experience, and whether students were working in the field they studied. These issues are important for understanding certain contributors to the gender gap such as difficulties finding a position in the field studied. However, including these variables comes at the expense of having to analyze a much smaller sample, one that is too small to evaluate whether the gender gap is lower for certain fields of study, or for older graduates. Because of the advantages and disadvantages of these approaches, the Annex includes both sets of results.

As discussed in more detail in Annex A, several issues arise that may affect the generalizability of the estimates provided in this study. First, the institutions surveyed may not be representative of other tertiary educational institutions in these countries. Without data from these institutions, knowing the direction of any effect is impossible. Instead, results should be interpreted as related to the surveyed schools. A second issue is that low survey response rates mean that the graduates responding to the surveys may be different from other graduates from the TEIs in those years. A major issue would be if women are more likely to respond to the survey when earning or working less relative to men (e.g., if men do not want to admit lower earnings due to cultural expectations). In this case, the study would overestimate the gender gap. However, such selection may show itself in the data – schools with disproportionately more female respondents in the surveys would also have larger gender gaps. Yet, for example only a slight correlation exists between female over representation in the surveys, and the earnings gap (correlation coefficient of 0.05). A lesser concern is that women (or men) are simply more likely to respond to the survey. However, this does not appear to be the case either, as the proportion of women responding to the surveys is very similar to that in the TEIs overall student populations—49.9 percent of women responded to the survey, compared to women making up 49.3 percent of the TEIs student bodies. Other differences could arise between those responding to the survey and the overall cohort of alumni for those years. For example, those responding could be self-selecting to be older than the overall alumni body, more likely to study certain degrees, and so on. For these measures, we cannot directly measure whether this type of selection has occurred because we do not have information on these measures for a relevant cohort of graduates or the student populations. However, to the extent that respondents are self-selecting on a measure that is included in the regression, the effect of this on gender gaps is controlled for, and so is not affecting the validity of the results. Therefore, while one limitation of the study is that we cannot preclude all possible issues arising from graduates' selection into responding to the survey, the major concerns are unlikely to be affecting the results or are effectively dealt with through the research methodology.

While most of the institutions in the dataset are private, 13 are public institutions. The participating institutions include research universities, technical universities, and TVETs.

Survey findings confirm female graduates face unique challenges while offering clues to solutions

Across the surveys, female graduates are 30 percent more likely than male graduates to report that they are in the two lowest earning categories, and 50 percent less likely to be in the highest earning category.* While some of these differences in employment outcomes are likely due to differences in field studied and other characteristics, analysis discussed in Box 2 and the Annex control for these differences and still find a considerable gender gap. Specifically, this analysis controls for factors beyond gender that could account for employment differences such as field studied, institution attended, family background, and age.

The presence of gender gaps suggests that female graduates are facing unique challenges hindering their employment and pay prospects. This section explores the factors associated with these challenges and outlines areas that TEIs, employers, and governments can focus on to overcome them.

Female graduates earn less than men across all fields of study

One potential reason females may make less than males is their chosen field of study: perhaps women simply study in fields that pay less. If this reason explained the gender earnings gap, then one potential solution would be for institutions to encourage females to enter higher-paying fields. Yet, as can be seen in Figure 2, the predicted probability a female graduate was in the highest two earnings categories within their country is lower across all fields of study. For instance, although engineering is the highest paying field on average, female engineering graduates earn less than men in the social sciences—a lower paying field—even once other characteristics are accounted for (see Box 2 and Annex). Indeed, the gap between male and female graduates is large across all fields. Overall, the marginal effect of gender is twice as large as the effect on earnings of being the first in family to attend tertiary education (the latter phenomenon is sometimes referred to as the "class gap," see Tables A5 and A6). Numerous factors may be driving the gender-based earnings gap, such as women being offered lower starting salaries or women being less likely to seek promotion.[28] [29] It is worth noting that the analysis does suggest that gender gaps in earnings are lower for graduates of technical and vocational educational institutions than for other types of institutions, suggesting TVETs may have lessons to offer on alleviating gender inequality (see Table A4).

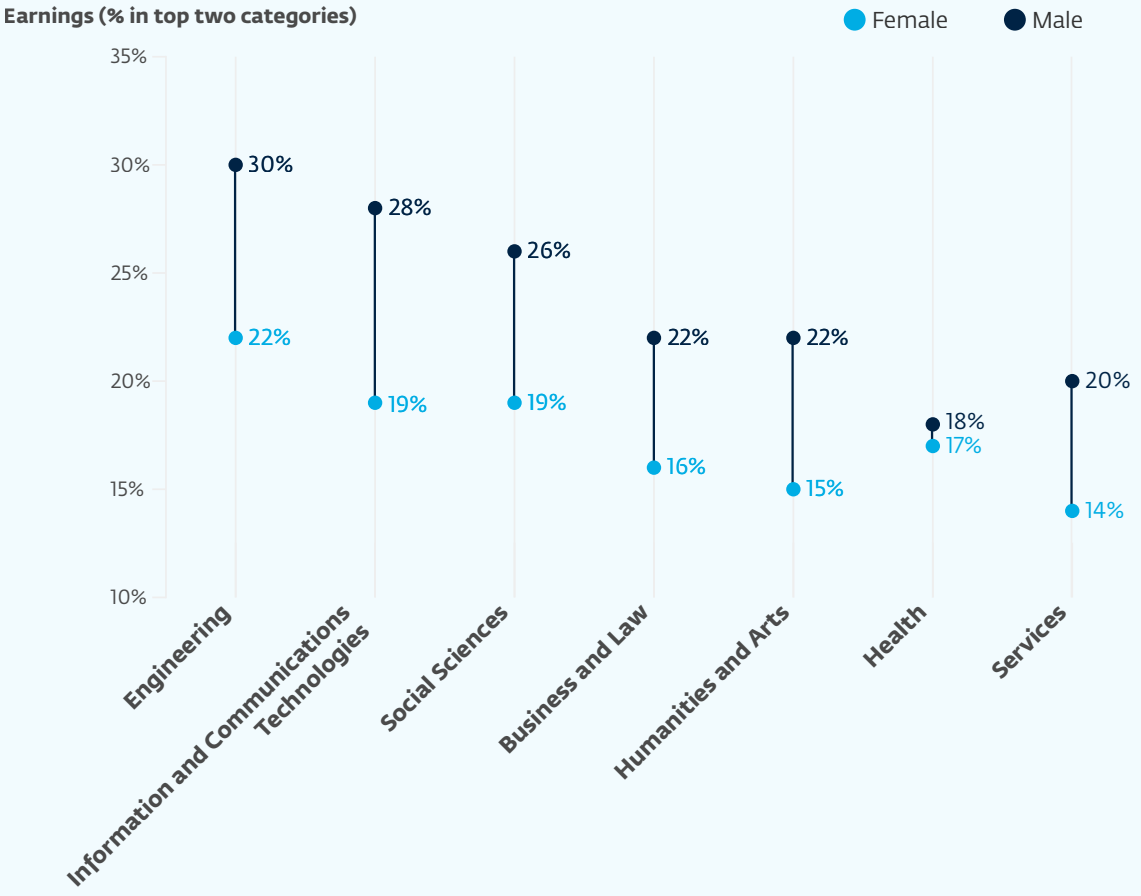
The gender gap likely contributes to the challenge of attracting women into high-paying STEM fields. The overall trend is for the earnings gap to be larger in higher earning STEM fields such as information and communications

* Respondents were asked to report on their earnings by selecting which range their earnings fell in. They were given five ranges to select from in answering the following question: What is your current gross monthly salary range? The ranges were determined for each country, and kept consistent across institutions within that country.

FIGURE 2

Graduate Earnings Disaggregated by Gender and Field of Study

Female graduates earn less than men across selected fields



Source: IFC analysis of Vitae survey results

Note: The figure shows the predicted probability of being in the highest two country-specific earnings categories across fields of study according to the analysis in Column II of Table A4. Earnings are measured by the predicted probability of graduates reporting that they are in the survey's two highest income categories. The navy and blue markers reflect the predicted probabilities for males and females respectively, controlling for other characteristics, including field studied, institution attended, type of institution (TVET or not), age, first in family to attend a TEI, and nature of employment (i.e., full time or part time, in the private or public sector). Interactions between gender and various other characteristics, like field and age, are also included.

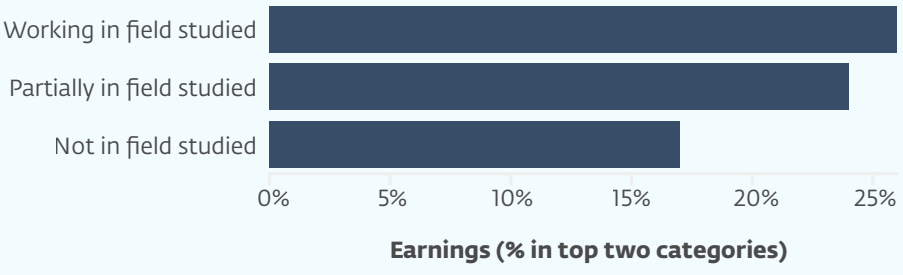
technology (ICT) and engineering where there are also relatively fewer female graduates. The gap is lower in fields with more female graduates such as business and law and health. The larger gap in ICT and engineering contributes to the result that female graduates in higher earning STEM fields are only modestly more likely to be in the top two earning categories compared to lower paid fields. For instance, as can be seen in in Figure 2, female social science graduates are only slightly less likely to be in the highest two earning categories compared to female engineering and ICT graduates. The modestly higher earnings in STEM for female graduates suggests that institutions attempting to increase female enrollment in the higher earning STEM fields (engineering and ICT) will face difficulties attracting women from other fields given the wage gains for these fields seem smaller than for men. This challenge is likely accentuated because relatively few women study or work in the field.[30]

The analysis finds that graduates working in the field they studied tend to have higher earnings. As shown in Figure 3, those who are not working in the field they studied are less likely to end up in the top two earnings categories in their country. The positive side is that, as shown in Figure 4, over time graduates appear to move into positions that utilize what they learned during their academic studies. In the surveys, the percentage of graduates working in their field of study rises from the mid-40s at graduation up to the mid-50s four years after graduation. As Figure 4 illustrates, the problem of earning less due to working outside your field of study appears to be larger for female graduates. The statistical analysis similarly suggests that individuals who are first in their family to attend college also

FIGURE 3

Impact on Earnings of Working in Chosen Field of Study

Graduates are more likely to get a high-earning job if employed in the field they studied



Source: IFC analysis of Vitae survey results

Note: The figure shows the predicted probability of being in the highest two country-specific earnings categories based on whether the individual is working in their field of study. The predictions hold other characteristics constant, including institution attended, field studied, age, gender, years since graduation, and work experience prior to studying (see Table A4, Column I, for further analysis).

struggle to land jobs in their field of study. Both these findings highlight the importance of developing professional or alumni networks for groups at a disadvantage in labor markets. The experience of developing country graduates analyzed through the Vitae surveys is broadly similar to the experience of college graduates in the United States, more than 50 percent of whom struggle to get a job that utilizes their college education in the year after graduation, and this leads to much lower earnings.[31]

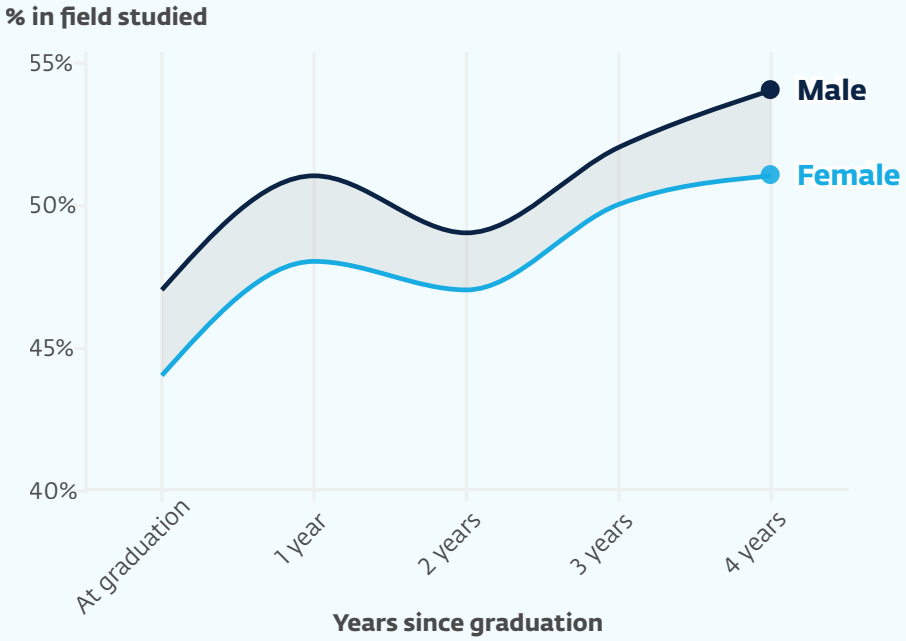
Gender wage gaps are lower for women in government employment

The results suggest that the earnings gap between male and female graduates is lower for those graduates who work in the government (see Table A4). This finding is in line with the World Bank's Worldwide Bureaucracy Indicators database, which reports that "women's average wages are 86 percent of men's in the public sector and 76 percent in the formal private

FIGURE 4

Gender Gap in Share of Graduates Working in Chosen Field of Study

Females are less likely to be working in the field they studied several years after graduating



Source: IFC analysis of Vitae survey results

Note: Years since graduation is measured as the difference in year of survey and year of graduation. The figure shows the predicted probability of being in the field studied across years since graduation (see Column V of Table A4 for further details). The navy and blue markers reflect the predicted probabilities for males and females respectively, holding other characteristics, including age, institution attended, field studied, and prior years of work experience, constant. The difference between male and female graduates is on the edge of traditional measures of statistical significance, with a p-value of just above 0.1, with prior years of work experience, field studied, and employment status, held constant.

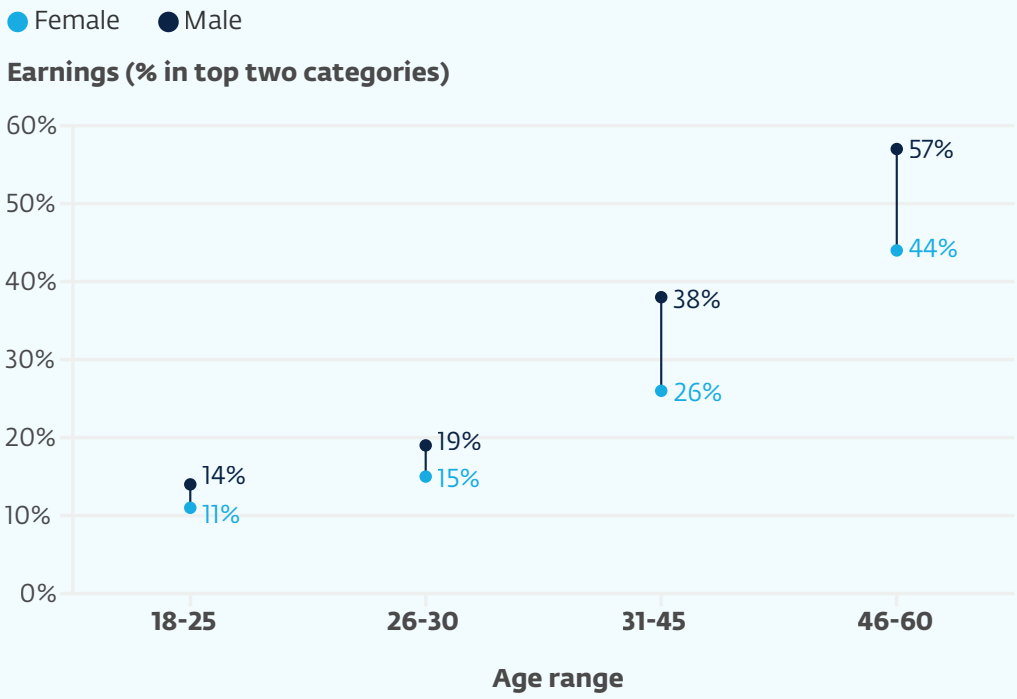
sector."[32] The Vitae survey results align with the view that gender gaps may be smaller in employers which, like government agencies, utilize more formalized pay structures and procedures for hiring, firing, and promotion.[33] [34]

Female graduates seem to face particular challenges stemming from career disruption. The effect of career disruption is suggested by the analysis of the Vitae surveys. As seen in Figures 5 and 6, the age of recent graduates is a key driver of the earnings and unemployment gender gaps. For younger graduates the earnings gap is relatively narrow, with similar fractions of females and males in the top two country-specific earnings categories. However, this gap widens considerably for older recent graduates—just 3 percentage points for recent graduates who are 18 to 25 years old but 13 percentage points for those aged 46 to 60 years.[35] Furthermore, while the unemployment rate is lower for older graduates,

FIGURE 5

Earnings Levels by Age

Older female graduates earn less than male graduates of the same age



Source: IFC analysis of Vitae survey results

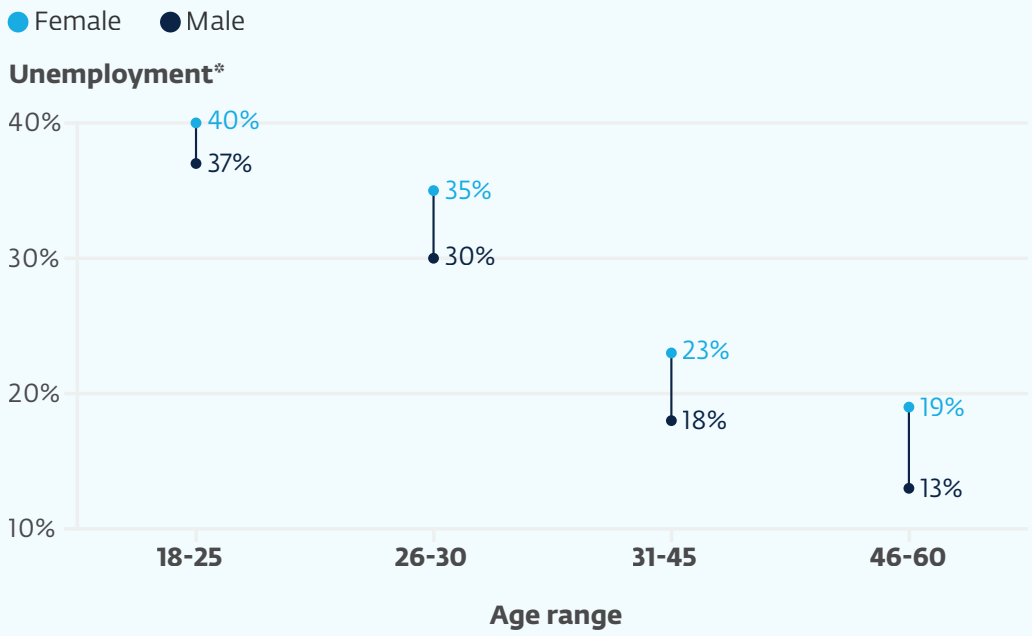
Note: The figure shows the predicted probability of being in the highest two country-specific earnings categories across age ranges (see Column II of Table A4 for further analysis). The navy and blue markers are the percentages for males and females respectively, holding other characteristics constant, including field of study, institution attended, age, first in family to attend a TEI, and nature of employment (full or part time, working in the public or private sector).

the gap in unemployment between males and females is larger with age. Importantly, almost all graduates in the survey are in employment or seeking work (as shown in Table A2 in the annex). The larger gap for older graduates is consistent with the results from an International Labour Organization study of 84 countries that highlights that living with a partner decreases labor force participation for women. Another potential contributor is unpaid care work. According to UN Women, the UN agency dedicated to achieving gender equality, women perform twice as much unpaid household work as men.[36] This includes time spent cleaning, cooking, and caring for children or the elderly.[37] Other possible explanations for the gap by age may be that women transition out of initial careers sooner than men or that women are being promoted less. That age is a key driver of the gender earnings and unemployment gap for recent graduates warrants further study.[38] [39]

FIGURE 6

Graduate Unemployment Rates — By Age and Gender

Older female graduates are more likely to be unemployed than their male counterparts



* Unemployment is measured by predicted probability of being unemployed and actively looking for a job

Source: IFC analysis of Vitae survey results

Note: Graph shows predicted values based on regression IV in the Annex. This is based on the broader set of surveys, as explained in the Annex. The navy and blue markers are the percentages for males and females respectively, holding other characteristics constant, including field of study, institution attended, age, gender, and first in family to attend a TEI.

BOX 3

IFC's Employment and Gender Equality Programs

According to World Bank research, women globally continue to face severe barriers to joining the workforce as the workplace gender gap has widened.* Women on average earn just 77 cents on the dollar compared to men, in addition to facing gender-specific challenges around personal safety, access to childcare, and job opportunities. In 20 countries, women are prohibited from working at night, and only one in five corporate board positions is held by women. IFC has been working with its clients in the private sector as well as with public sector bodies and other partners to address these issues and promote women's access to better jobs and entrepreneurship opportunities. Two key initiatives worth highlighting in this regard are:

Women's Employment Program

Between 2018 and 2023, IFC's Women's Employment Program supported more than 350 companies across the manufacturing, agribusiness, and services industries (including healthcare, retail, and tourism) to be more gender inclusive in the workplace. This included doing firm-level gender assessments with 14 IFC clients to identify gender dynamics including workplace policies, representation in management and leadership, board representation, promotion rates, equal pay, gender-based violence, employer-supported childcare, and other inclusive workplace issues. The assessments also quantified the costs and benefits (labor, productivity) of gender-smart policies. The program had a capacity-building component that provided advice to 330 companies and partners on the business case for gender inclusion and on how to create evidence-based gender inclusive strategies. Part of the capacity-building strand targeted more than 100 supplier companies in the garment industry, 86 percent of which reported that they were planning or implementing gender-smart actions, with 90 percent attributing the training series to catalyzing their decision to implement

Photo © Dominic Chavez/IFC

gender-smart actions. Individual clients reported: increases in women's representation in middle management, corporate leadership, and board positions; reductions in absenteeism and voluntary turnover; increases in retention of women workers after maternity leave; increases in the number of women promoted; creation of new inclusive workplace policies; revisions of gender pay gaps; and policies and training to create more respectful workplaces and respond to gender-based violence.

Tackling Childcare

Access to childcare continues to be a challenge for working parents, particularly women, who spend almost two and a half hours per day more than men on unpaid work, including childcare. Increasing access to childcare is correlated to an initial increase in women's participation in the labor force by 1 percentage point. IFC's research in Nigeria estimates that the demand for childcare will continue to grow by 10 percent by 2025. IFC's initiative, Tackling Childcare, involves working with clients and partners—including policymakers, childcare providers and governments—to document the business case for employer-supported childcare, conduct needs assessments, and review options that would best serve working parents. In Bangladesh, for example, IFC found that among firms that offered employer-supported childcare options, 74 percent reported greater employee productivity, 72 percent reported improved employee retention, 56 percent reported women's career advancement, and 51 percent reported improved profitability.

* The World Bank. New Data Show Massive, Wider-than-Expected Global Gender Gap. March 4, 2024.

Female graduates were more likely to recommend an institution to others when they have better employment outcomes. Improving employment prospects is an important rationale for attending a TEI. For most female graduates a good job was "very important" or "extremely important" in their decision to enroll in the program. Ninety percent reported that increasing earnings was similarly important to their decision to enroll.

Consistent with the high priority that students place on earnings, graduates were 20 percent more likely to suggest that the benefits of their education outweighed the costs when they were in the highest earning category, and higher-earning graduates were also more likely to recommend the institution to others.

Photo © Ashesi University

3

Gender-Informed Approaches to Improving Employability

The analysis of the Vitae survey results suggests that simply working to ensure parity in male and female tertiary graduation rates is insufficient to bring about gender equity in employment outcomes. More concerted efforts are required to ensure that female tertiary graduates do not fall behind equivalent male counterparts on the key employment outcomes: earnings and employment rates.

Enhancing female graduate employability requires collaborative interventions by TEIs, employers, governments, and communities. To achieve sustained impact, it is imperative to adopt targeted gender-inclusive interventions to support women's employability and to mainstream gender equality across programs and policies intended for improving employability more broadly.[40] [41] Additionally, interventions should consider change management dynamics to promote a comprehensive gender inclusion strategy, emphasizing a clear shared vision, securing buy-in from key stakeholders, pursuing early wins, and shaping beliefs and attitudes through setting evidence-based and intentional targets as well as authentic communication and advocacy.

Role of Tertiary Education Institutions

The link between employability, reputation, and rankings cannot be overstated. As discussed above, the Vitae surveys indicate that a significant factor driving participants to enroll in institutions is the desire to enhance their employment opportunities, with more than 95 percent of survey respondents

either employed or seeking a job. This is consistent with the results from a survey of U.S. undergraduates which revealed that student outcomes, including post-graduation employment, ranked among the top three factors influencing the choice of universities, second only to affordability.[42] As such, the success of graduates is vital to the success and sustainability of TEIs. By enhancing employment outcomes for women graduates, TEIs can improve their brand and reputation through better net promoter scores,** helping them to attract new learners. This will impact their bottom line, underscoring that there is a clear and compelling business case for institutions to address gender gaps in employability outcomes.

Get commitment and leadership from the top

Leadership is at the core of high-quality education. According to UNESCO, there is a growing belief that leadership may be the second-most important factor that explains learning outcomes.[43] TEI executive and academic leadership must fully commit to achieving equitable employment outcomes for their male and female students. This includes formulating an institutional strategy on women's employability, strong leadership commitment, adequate resource deployment, and robust policies and actions informed by systematic graduate outcomes data. Including a gender analysis and objectives in key TEI documents such as strategic plans can provide a strong signal to the academic community that the employability of female students is a priority.

Being aware of significant discrepancies between student gender mix and the gender mix of faculty in particular departments can yield benefits for both male and female learners. This awareness can help to prevent and address biases or gaps where present, providing students with opportunities to identify role models, mentors, and networks, particularly in fields of study and industries where women are under-represented. Furthermore, TEIs should eliminate gender-based stereotypes from curricula and teaching materials—as well as biases coming from instructors.[44] Research has found that teachers' perceptions of sex-based ability can have a negative impact on girls' pursuit of technology-related studies.[45]

Collect gender-disaggregated data, at the level of programs, through tracer studies

Collecting gender-disaggregated employment outcomes data at the program level, through regular tracer studies, is the first step to making evidence-based decisions to address employability gaps. Tracer studies that use technology solutions linked to the university's student information system will allow for more advanced analysis, including predictive analytics. It is important that tracer studies are systematic—meaning they are conducted regularly, in a standardized manner, and aim for a sound response rate. Data should be analyzed at the level of credentials and individual programs to obtain useful insights. Gender-disaggregated data, when analyzed at the program level, makes gender gaps more

** A net promoter score is a measure of customer loyalty that ranges from -100 to 100, with any score above zero suggesting more promoters than detractors

visible, promotes accountability for addressing them, and can help build trust with key stakeholders working toward gender equity, including employers. IFC's Vitae program supports TEIs in implementing tracer studies and gives initial guidance on where to begin.

Share information and differentiate career support

Career services are quickly becoming personalized through adoption of technology, including artificial intelligence. This makes it much simpler to differentiate career support to students throughout their educational journey, informing them about career prospects, skills gaps, the financial returns of various occupations, the importance of lifelong learning, and job search tools, inter alia.[46] [47] There is evidence that women are more likely than men to apply for jobs only where they meet all criteria (instead of some or most), and that they are less likely than men to negotiate their salaries when considering a job offer.[48] [49] Institutions can offer career development workshops and resources tailored to the needs of women graduates. Advisors can help address individual skills gaps by offering resume-writing workshops (including through technology), mock interviews, and by teaching negotiation techniques. Institutions can provide access to online career resources that address gender-specific challenges in the workplace, dispel myths about the job application process, and provide benchmarks and reference points to help female job seekers better prepare. For example, as highlighted in the 2021 UNESCO publication Investing in Career Guidance, the Khetha radio program in South Africa was used by the public employment service to provide career guidance "for all citizens regardless of geographical position or socio-economic status" through a weekly 30-minute live radio program in all 10 official languages. The target audience was a largely rural population aged 15 to 65, with 3.1 million listeners a week reached in a cost-effective way.[50]

TEIs can also help all learners make well-informed choices when selecting faculties of study and careers. Publishing information on employment rates and starting salaries of typical graduates in different fields is one example. For instance, in a randomized experiment in the Democratic Republic of Congo, when women were provided with information on trade-specific earnings, they were 28.6 percent more likely to apply to traditionally male-dominated trades.[51] In order to build a pipeline of women workers in traditionally male-dominated fields, such as STEM, outreach programs can be developed to target girls at secondary level or earlier. These TEI programs can encourage girls to pursue their interests in scientific or technological fields.[52]

Increase relevance of learning through engagement with industry

Aligning teaching content and methods more closely with industry needs can contribute significantly to narrowing skills gaps. Many institutions use industry-led program advisory committees to help align their programs with industry needs. These advisory boards, which are working groups composed of professionals from industries that hire a program's graduates, provide advice on matters such as curriculum feedback, program review, new trends and technology, and skills needs in the industry. They help promote the institution in the community, including to employers, and support fundraising

BOX 4

What Are Universities Doing to Close Gender Gaps?

While measurable progress has been made on female representation in higher education, practitioners agree this is only half the battle. As students move toward graduation and job-seeking stages, they need different kinds of guidance and support. This is reflected in conversations with staff working on this issue at a number of TEIs.

An institution taking action to close the gender gap is **Mangosuthu University of Technology (MUT)** near Durban, which is also one of the few higher education institutions in South Africa located in a township. Dr. Paulette Naidoo, Director of Student Counseling, highlighted something that may seem obvious but is not necessarily so: encouraging female students to actually apply for more jobs. Dr Naidoo said this resonates with the widely used reference to Sheryl Sandberg's statement in her book *Lean In* that 'men apply for positions if they meet just 60 percent of the requirements, while women only apply if they meet 100 percent.' Dr. Naidoo added: "Our institution is taking on a greater advocacy role in this area. We encourage employers to say more explicitly when recruiting that they welcome women applicants."

If female applicants are offered a job, one valuable tool they can be equipped with is salary negotiation skills. This is described by Verusha Maharaj, Managing Director at **Red & Yellow Creative School of Business** in Cape Town, South Africa who said: "In our survey of alumni, this was an area where many students asked for our help. Females tend to be more uncomfortable demanding a minimum salary than males." Her institution has responded by organizing webinars to tutor students in salary negotiations. "We are also asking employers to have open and frank discussions about the gender pay gap," she said.

These sentiments were echoed by Nuzhat Kamran, Director for Advancement at **Lahore University of Management Sciences (LUMS)**, a private not-for-profit institution in Pakistan: "Inherently, women are averse to negotiating their salary. But increasingly I see younger women—Generation Z and millennials—being less shy in asking for what they need." Kamran noted that boosting female students' self-worth helps, and that this is in fact being buoyed by their increasingly superior grades—a notable trend in recent years with girls tending to get higher scores in exams than boys.

Another useful confidence and knowledge-building exercise cited by practitioners is inviting employers and successful professionals and alumni to come from outside to speak with students. As Red & Yellow's Maharaj put it: "Gaining access to networks is a key aspect of employability. Our survey revealed a demand for mentoring programs. We are setting up a 'Meet the Matriarch' program to address this."

Kamran at LUMS also touted the benefits of mentoring: "We just launched LUMS Commons, an online platform that will make our existing mentorship program less ad hoc and more formal. Senior alumni register as mentors and younger alumni and students register as mentees. We then do the matching." She added: "We believe that among other things, this counseling will help students especially females in negotiating a better package during job interviews. The mentees are all students for now, but we plan to extend it to alumni."

By taking a pro-active approach, TEIs and employers can reduce gender gaps and boost female employment rates. LUMS' Kamran noted that large corporates in Pakistan have been active lately trying to bring back into the labor market women who left it for a long time to raise a family. In Pakistan, just 25 percent of female graduates are in employment, she noted, while the share for LUMS alumni, at 74 percent, is much higher.

Laura Kakon, Group Chief Growth and Strategy Officer at **Honoris United Universities**, a network of 16 higher education institutions in 10 African countries, noted that "86 percent of [our] male graduates are employed within six months of graduation, compared to 82 percent of females." The gender gap is well below the market average: currently, the labor market participation rate for women of working age averages just 22 percent in Morocco, 25 percent in Tunisia, 47 percent in Nigeria, and 46 percent in South Africa.

Echoing others' support for gender-informed outreach in recruitment, exposure to female role models, and mentorships, Honoris' Kakon added that buy-in from leadership was key too: "You need to have a deliberate approach coming right from the top—and not just from female leaders." Getting quality data is equally crucial to closing the gender gap, she said. "You need reliable data and milestones that can be measured. We track employment rates, salaries, quality of jobs, levels of entry, the time it takes to get a job—and we track this yearly to see the evolving trends and track progress."

Photo © IFC

efforts. They support the program's internship and job placement efforts. The Vitae surveys suggest that graduates not working in their field of study are 12 percent more likely to be in the lowest two quintiles of income and 6 percentage points less likely to be higher earning. These results control for the various factors that affect earning outcomes such as institution attended, work experience, and age. This suggests that the disadvantage of working outside the field studied is comparable in magnitude to the advantage from studying in a higher-earning field such as engineering. These results suggest that it is critical for tertiary institutions to help align the fields that students study with the needs of the labor market. For example, in South Africa, the Education, Training and Development Practices Sector Education and Training Authority finances training for TVET teachers to help them keep up to date with evolving industry practices.[53]

Ensure the availability of micro-credentials and lifelong learning opportunities

Micro-credentials are qualifications composed of a series of short, competency-based courses that focus on the acquisition of technical skills for a particular industry or career. They allow students to further target their education to the needs of the labor market. Often, micro-credentials are offered by institutions and digital platforms such as Coursera as a series of top-up courses that provide career-critical knowledge, technical competence, and skills. For traditionally female-dominated fields such as communications, psychology, and administrative support, micro-credentials can play a key role in increasing employability. Evidence from the United States is promising. In the state of Virginia, for example, additional community college credentials have large and positive effects on employment and wages.[54]

Connect students to the workplace. This can be done by increasing work-integrated learning opportunities, from internships to co-ops

This helps align course content with industry needs while providing students important practical experience during their studies. Moreover, while evidence on the effectiveness of internships on early labor market performance is mixed, some research has shown that internships can boost graduates' employability.[55] [56] [57] [58] [59] [60] Increasing work-integrated learning opportunities can support graduates in finding employment in their field, which would disproportionally benefit female students for whom this is a particular challenge as discussed above.

Engage students early and continue through their academic journey

Engagement with students should begin in their first year with introductory seminars and workshops on life after graduation. Employer sessions, particularly ones that showcase women in leadership roles, can lead to mentorship, especially if these sessions include alumni. Furthermore, a structured system of mentorship with senior students, alumni, employers, and faculty from various disciplines (business, STEM, nursing etc.) can expose female students to different versions of what success can look like. It is also important to engage with male students and alumni to ensure inclusivity in the selection process and

BOX 5

IFC's Vitae Employability Advisory Program

IFC developed Vitae, an employability advisory program, to help universities prepare graduates for the job market. Vitae empowers higher education institutions to improve their graduation employability practices through a data-driven approach. The tool has been delivered by IFC specialists to over 100 tertiary education institutions in developing markets, sharing proven techniques to improve graduate employability, while helping to align processes with global good practice. Increasing the focus on graduate employability has been shown to bring many benefits including: improved student outcomes; enhanced relevance of programs; strengthened competitiveness; and institutional self-improvement. A focus on employability creates an opportunity to consistently improve and innovate, build partnerships, and deliver on the promise for students. Vitae employs a standard methodology and tailors it to the needs of each individual institution. The process involves three steps as described below (more information on Vitae is available at www.vitaeready.org).

ASSESSMENT

A systematic approach of institutional self-assessment, stakeholder surveys, and qualitative interviews with faculty, staff, employers, and students to measure operations and current employability practices.

RECOMMENDATIONS

Debrief held with management to deliver tailored analysis and findings. Good practices are shared as recommendations for improvement. Benchmark to peers is provided.

HANDS-ON SUPPORT

IFC experts work with universities to increase the relevance of programs and student support services and align with the needs of the global and local labor market.

Source: https://www.vitaeready.org

encourage male alumni to mentor younger women students by providing career advice, internship opportunities, and project support. Finally, soft skills like presenting, resume writing, interviewing, negotiation, and networking can be refined through workshops and coaching so that these skills are continually fine-tuned as the student progresses through academic life.

Engage employers

TEIs are strategic partners for employers and can use gentle persuasion to convince them to aspire for gender equity in pay and employment. Gender-responsive employer engagement can contribute to broadening horizons and supporting women's transition from education to work.[61] [62] TEIs can ensure equitable participation of female students in talks, workplace visits, enterprise competitions, curriculum enrichment, research collaborations, internships, and work-based learning.[63] To manage the risks of "occupational segregation," advisory committees can be created to promote proactive measure that encourage young women to aspire to careers in traditionally male-dominated fields like STEM. Furthermore, TEIs can collaborate with employers to institute hiring practices that are based on potential and skills rather than only credentials and experience.[64] Encouraging employers to use diverse teams for hiring (gender, occupation), conduct annual pay equity analyses, and to act on their findings may help reduce the wage gap.

Engage alumni

A robust alumni engagement policy hinges on building a strong community, being explicit about the need to address women's employability, and providing varied opportunities for support depending on different alumni profiles and availability.[65] For instance, successful female alumni can serve as role models and mentors for current students and recent graduates. In our analysis, we found that universities with developed alumni programs tend to have more students transition into higher earning categories and into full time employment. Indeed, ICT mentorship programs for women and girls have been found to be effective both within and outside the formal education sector. The Aspirations in Computing initiative, established in the United States, is a good example of a network that works with schools. Of the 9,500 girls the program has reached, 75 percent expressed interest in taking a future computing class after the program concluded, suggesting that mentorship relationships, particularly among girls who are close in age, can significantly influence girls' motivation to develop more advanced ICT skills.[66]

Leverage technology

Flexible learning solutions can underpin skills development for women, especially caregivers. An IFC study on women and online learning showed that women are 38 percent more likely than men to indicate that they intend to pursue a mix of online and offline education or training in the future, showing interest in blended learning options.[67] In cases where online learning was unavailable, 42 percent of men, 45 percent of women, and 60 percent of female caregivers expressed a willingness to delay or forgo their education, underscoring the impact on women in particular. However, according to UNESCO, women and girls are 25 percent less likely than men to know how to leverage

digital technology for basic purposes, four times less likely to know how to program computers, and 13 times less likely to file for a technology patent.[68] A way to overcome the digital skills gap could be to embed ICT in formal education as it was done by Harvey Mudd College in the United States which has boosted the percentage of female computer science majors from 10 percent to 55 percent in about 10 years by redesigning its introductory computing course.[69] Online learning can therefore support women's acquisition of job-relevant skills, potentially improving their employment outcomes.

Role of Employers

While TEIs and governments can contribute to building skills and creating a conducive environment to close gender gaps, decisions regarding recruitment, hiring, promotion, and retention ultimately lie with employers. Programs that support women's employment can give them a strategic advantage: enterprises with gender-inclusive cultures are 9 percent more likely to have improved business performance.[70] Additionally, firms implementing equal employment policies and gender-inclusive cultures are 60 percent more likely to report increased profits and productivity.[71] The following actions can be taken by employers to this end:

Conduct gender assessments

Gender assessments and audits can help employers better understand gender dynamics in their talent management strategy and how company practices, policies, and programs hinder or contribute to gendered outcomes in the workplace. They can cover a wide range of topics, including how men and women are distributed across the organization, promotions, recruitment and retention, absenteeism and turnover, flexible work arrangements, employer-supported care programs, organizational culture, corporate strategy and related key performance indicators, objectives, budget, and monitoring and evaluation systems.[72] Identifying gender pay gaps is becoming a central element of gender assessments, providing comprehensive analysis on remuneration and differentials between women and men.[73] Gender assessments can underpin equal employment and gender-inclusive policies and practices by helping to establish a baseline, identifying challenges and opportunities for action, and defining a gender action plan based on the employer's unique characteristics.[74]

Promote gender-responsive employment policies and programs

At a company level, gender-responsive employment policies explicitly pursue the objective of gender equality across departments and levels of hierarchy. While national normative frameworks for such policies vary from country to country, employers across the globe can draw from a wealth of best practices and benchmarks for both the public and private sector. For instance, during the recruitment process, gender-inclusive language and imagery can be utilized in job advertisements to ensure that postings appeal to both men and women. Additionally, discriminatory interview questions on themes such as pregnancy and marriage intentions must be avoided.[75] Gender-responsive employment goes beyond the recruitment process. It also encompasses ensuring equal access to training and promotion opportunities; policies on non-discrimination; fair and

equitable pay; flexible work arrangements and support to working parents; leave benefits (paternity, parental, maternity); and creating safe and respectful workplaces with zero tolerance for violence or discrimination against women. For example, IFC's Gender Equality and Returns training program, developed through a partnership with the International Labour Organization, helps women working in the garment manufacturing sector advance to more supervisory roles. Among the more than 150 apparel businesses where the program was deployed, the factories reported a 3–8 percent improvement in efficiency and a 5–8 percent improvement in quality.[76]

Have family-friendly work arrangements

This can be a win-win for employers and workers, including women. Employers with family-friendly work arrangements can benefit from enhanced staff productivity and retention. Employees benefit from improved morale.[77] Additionally, employer-supported childcare can support workers with families and should be offered to both men and women. Flexible working arrangements where appropriate, such as part-time work, compressed work hours, job-sharing, and telecommuting can help reduce stresses that accrue from balancing career and family.[78] Research has shown that new mothers are more likely to drop out of the workforce or face a greater gender pay gap throughout their career. This phenomenon is known as the maternity or motherhood penalty. Astute companies have begun to organize re-entry programs for women returning from maternity leave, providing reduced hours, part-time options, lactation spaces, and

BOX 6

UNESCO and Dior's Program to Break the Glass Ceiling

An example of an employer actively working to enhance female employability is the WOMEN@ DIOR Education & Mentoring Program which, since 2017, has empowered women in their 20's to enter the professional world with the skills, confidence, and ambition needed to break the 'glass ceiling.' The program seeks to embed five core values in its participants: self-awareness, autonomy, creativity, durability, and inclusion. Selected women are provided mentorship; an education platform with over 25 online courses; participation in the 'Dream for Change' project where mentees apply the knowledge acquired in the program by designing and implementing a social entrepreneurship project that creates tangible positive impact for young women; and finally, the presentation of projects at the UNESCO & WOMEN@DIOR Global Conference.

2023 UNESCO & Women@Dior Global Conference
Photo: © Christian Dior Couture

other support. Assessments and certification programs help clients to track the retention of working mothers a year after returning from maternity leave to determine whether or not the company is having difficulty retaining new mothers, and to identify the best ways to support their retention. However, these arrangements should be designed in such a way that does not hinder women's higher earning and promotion opportunities.[79]

Collaborate with TEIs

As part of their company strategy, employers can leverage university-industry relations to address skills mismatches and enhance opportunities for women in the world of work. Women-focused apprenticeships and internships can help build a pipeline of future female employees in high-paying or traditionally male-dominated fields. Firms can encourage female employees to take up event speaking and mentoring opportunities at universities and TVET centers. Grants and award programs can also play a major role in supporting students' employability in specific fields. For instance, the L'Oréal USA Women in Science program awards female postdoctoral scientists substantial grants to underpin their contributions and work in STEM.[80] Additionally, employers and employer organizations can collaborate with TEIs through sector skills councils to ensure that workforce planning, labor market analysis, and training programs are all gender informed. Moreover, the language used to describe job postings is particularly important. Gendered language in job postings and course descriptions that emphasizes competitiveness and assertiveness over teamwork and relationships may discourage women from applying. A study of job advertisements in

BOX 7

IFC's Women's Employment Program (WEP)

IFC helps companies conduct gender assessments in the workplace and provides them with evidence-based recommendations for action through its Women's Employment and Workforce Programs established in 2018. The assessments look at three sources of data: human resource and talent flow; company policies and practices; and employee experience as measured through surveys, interviews, and focus groups. This data analysis is done in the context of the company's overall corporate strategy and institutional priorities. This enables a unique business case to be developed that addresses gender and inclusion and that is tailored to each company. The program helps companies better identify gender gaps in their organization, take appropriate action, better allocate resources, and communicate authentically internally and externally on gender dynamics. Taking such an approach can spur improvements in recruitment, workforce retention, employee engagement, and in the employer's brand. It can also create training and career progression opportunities, particularly for women employees.

Photo © Botho University

the UK identified the top male-gendered words as lead, analyze, competitive, active, and confident, whereas the top female-gendered words were support, responsible, understanding, dependable, and commitment.[81] Furthermore, in-office training and awareness programs can help socialize and emphasize the importance of women's full participation in historically male-dominated fields.

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Role of Governments

There are many interventions governments can make in education, labor markets, and social protection to help female graduates find and keep decent jobs. Closing gender gaps in labor markets goes beyond the realm of skills, employment, and safety nets. A whole of government approach is required. The following are some of the actions governments can take:

Mainstream gender equity into TEI missions

Gender equity should be mainstreamed in national plans on education and training. Importantly, gender equality should be integrated into national curricula and teacher training programs. According to UNESCO, women in general are less likely than men to be enrolled in TVET.[82] Gender-targeted measures such as subsidies and vouchers can be directed to boost women's enrollment in underrepresented fields. For instance, government subsidies could require TEIs to meet a quota of women in STEM and other male-dominated fields. Recruiting and training more female ICT teachers may be particularly beneficial to women. In North America, for example, girls' interest in computing has been found to be significantly higher when the subject is taught by a female teacher, whereas boys' interest is unaffected by the teacher's gender. Female teachers' self-efficacy, or confidence in their knowledge of the subject and their ability to teach it, has been linked to girls' achievement in STEM subjects but not to boys.[83]

Include female employability in tertiary education governance

Governments can instrumentalize TEI governance to improve female employability. For instance, ministries of education can ensure women's equal representation in TEI leadership positions and governing bodies, as this can boost female students' aspirations and educational attainment.[84] This could be achieved through direct appointments in public institutions, or sector-wide directives to nudge both public and private TEIs toward gender-balanced boards, leadership teams, research faculty and teaching corps. Additionally, regulatory frameworks could require regional governments or individual TEIs to report gender-disaggregated data on labor outcomes and participation in different fields (including STEM).

Support Work-Based Learning

Governments can support a variety of work-based learning schemes to help women access in-demand sectors and occupations. For instance, the United States' Women in Apprenticeship and Nontraditional Occupations program helps women take part in quality apprenticeships in high-paying fields such as manufacturing, cybersecurity, and infrastructure.[85] Governments can also provide tax benefits to enterprises that run gender-inclusive internship or apprenticeship programs.

BOX 8

Tackling the Gender Digital Divide: Interventions Targeting Girls and Women

Gender-equal education will not be realized until gender issues are mainstreamed. Improved awareness is needed about the biases that keep women out of technology fields, both within the education sector and in society more broadly. Interventions do not necessarily need to focus on upskilling women and girls to make a difference in the digital skills gender divide. Educators should be encouraged to take a step back and think about the ways in which discourses around technology are gendered and how this has trickled into everything from the curriculum to the posters on classroom walls. As much as efforts are needed to equip women and girls with digital skills, so too are interventions to enhance understandings of how the digital field is biased and to encourage approaches to neutralize this bias and make digital skills education attractive and approachable for all learners.

Source: UNESCO & Equal Kills Coalition. I'd Blush If I Could: Closing Gender Divides in Digital Skills Through Education. 2019. Page 56.

Photo © Al Hussein Technical University

BOX 9

How UNESCO Is Empowering Women in Madagascar

In 2008, UNESCO launched a program dedicated to empowering women in the Tsingy Natural Reserve, a UNESCO World Heritage site in Madagascar. The main goal of the program was to help women leverage the economic benefits of tourism by developing skills necessary for their economic integration, with a focus on catering and hospitality, agricultural professions, crafts, and tourism.

The program had three objectives: to qualify 210 young people, of whom 80 percent were women, for identified lucrative professions and support their integration; to promote sustainable community tourism by mentoring 10 cultural guides/animators and strengthening the capacities of 5 village communities; and to equip 600 women with horticultural (500) and embroidery/weaving (100) skills.

The program's approach involved: implementing an information and awareness campaign that highlighted the importance and benefits of women's professionalization for the local community; facilitating women's access to credit; profiling future learners; and creating a 'label' and launching an awareness campaign to enhance recognition of products crafted by women from the site.

The program resulted in 60 individuals, of whom 45 were women, being trained in sustainable tourism professions and getting hired by hoteliers and restaurateurs in the reserve, with 41 (32 women) receiving job offers. In addition, 138 individuals, of which 104 were women, were certified to practice lucrative hospitality and restaurant professions and are now capable of working and developing these skills. A further 105 women, having received training in producing tourist/artisanal products (including 70 in weaving and 35 in embroidery), have increased their income through product sales. A label was developed and recognized for the sale and marketing of products from women trained by the program. Finally, 562 farmers were trained in agricultural professions such as rice cultivation and short-cycle poultry farming.

Photo © World Bank

Enhance social protections and have pro-active labor market policies

Social protection measures are designed to reduce and prevent poverty and social exclusion throughout a person's life and can help improve female employability.[86] Active labor market initiatives like job training and job search assistance can support unemployed or underemployed women in acquiring new skills or identifying employment opportunities. For instance, Singapore's HerCareer initiative provides resources and opportunities for women re-entering the workforce.[87] Government initiatives that support childcare are also vital. There is evidence that increased government coverage of childcare enhances women's labor market participation.[88]

Indeed, governments should implement policies that address the growing mismatch between the skills that young workers have and the vacancies that employers want to fill. For example, in Malawi, according to the Malawi Confederation of Chambers of Commerce and Industry, there is not enough interface between TVET institutions and the private sector, which contributes to female youth unemployment remaining extremely high.[89]

Include gender in macroeconomic policy

Opting for individual taxation over family-level taxation has the potential to reduce the tax burden on secondary earners, particularly women, and could result in positive changes in aggregate labor market outcomes. Additionally, implementing gender budgeting—which allocates public resources for addressing gender inequalities—can increase the likelihood of women experiencing equitable benefits from counter-cyclical measures.[90]

Conclusion

This report, a collaborative effort between IFC and UNESCO, highlights how progress has been made in narrowing the gender gap in education enrollment, particularly in tertiary education. However, the report's analysis reveals persistent gender disparities in employment outcomes among graduates, underscoring the need for comprehensive interventions to ensure that women successfully transition into the labor market. The analysis emphasizes the need for gender-targeted and gender-integrated approaches to improve women's employability, with recommendations on actions that TEIs, employers, and governments can take. It also outlines the benefits these key actors will likely accrue from taking such actions.

The findings from the Vitae surveys, conducted by IFC, offer valuable insights into the challenges faced by female graduates in accessing meaningful employment opportunities across diverse contexts, particularly in developing countries. Analysis of the responses shows that female graduates earn less across fields of study than their male counterparts. However, gender gaps in earnings are lower for graduates of technical and vocational educational institutions. Interestingly, students who work in positions outside the field they studied tend to earn less. Moreover, the findings also suggest that women face greater career disruptions, evidenced by the widening earnings and employment gap between older male and female recent graduates. Finally, the analysis shows that female graduates are more likely to recommend their educational institution to others when they have better employment outcomes. What is driving these gender gaps is an area where further study is urgently needed.

Addressing the challenges identified in this report requires concerted action from multiple key stakeholders. Tertiary education institutions are a critical link in ensuring women successfully transition from school to work. The results from the Vitae surveys emphasize the value of tracer studies of this kind. They are key to identifying the problem, finding solutions, and tracking progress, and thus further work along these lines is recommended (the Vitae website provides further information on tracer studies). Commitment and leadership from TEI leadership is needed to prioritize gender mainstreaming in their policies and practices. Furthermore, since decisions regarding recruitment, hiring, promotion, and retention ultimately lie with employers, they can contribute to closing gender gaps by implementing inclusive employment policies and practices that support women's recruitment and advancement. As for governments, they can help close gender gaps by fostering gender-responsive education programming and economic policies.

TEIs, employers, and governments alike stand to gain from closing gender gaps in the workforce, whether through enhanced reputation (TEIs), improved profitability (employers), or increased economic productivity (governments). Ultimately, the benefits of improving women's employability extend beyond individual empowerment—they generate broader societal and economic gains. Women are half the world's population. As we strive for a more inclusive and equitable future, it is imperative that we continue to prioritize gender-targeted and gender-integrated approaches to empower women and promote sustainable development worldwide. There is no single solution to improve women's employability, rather it is collective and coordinated efforts that can empower and enable women to achieve this ambition.

Annexes

Annex A

Vitae Survey Data

This study has used regression analysis on Vitae survey data to evaluate whether gender gaps in earnings, unemployment, or employment in one's field of study are statistically significant after controlling for various factors that can be expected to be associated with differences in outcomes such as field of study, institution, and age. The regressions also include interactions to evaluate whether the gender gap is different for graduates based on type of employment, field of study, and age.

Description of data

The study uses results from a series of surveys that IFC conducted as part of its Vitae advisory program offered to tertiary institutions to help them improve their graduates' employability. The surveys are conducted by institutions directly emailing graduates from the previous three years, with the responses compiled on a third-party platform. The Vitae surveys were conducted across 22 developing countries at 54 institutions. Many of these are private. However, the survey has been also conducted at 13 public tertiary institutions. While most institutions are universities, 15 also provide TVET qualifications.

Table A2 shows selected descriptive statistics. The first two columns show results for the overall sample. The third and fourth columns show statistics for the subset of surveys which included questions on experience, and whether the graduate is working in the field they studied. The subset of surveys has a similar proportion of gender disparities when compared against the full sample.

Table 2 indicates that most graduates are in the 18-25 years age range. This group is likely to include those graduates who studied full time immediately after secondary school. However, many respondents are older, with around 40 percent aged between 26 and 45 years. The overall tendency is for male graduates to be older. A greater proportion of women report being unemployed and a smaller proportion report being in the higher earning categories. As expected, there are more men reporting that their field of study was engineering, or information and communication technology. Health and education have more female respondents.

TABLE A1

Institutions Surveyed, by Region and Type of Institution

	Number of institutions	Share of institutions	Number of respondents	Share of respondents
Overall	**54**		**14,643**	
Region				
Sub-Saharan Africa	26	48%	5,287	36%
East Asia	3	6%	912	6%
Latin America and the Caribbean	20	37%	7,987	55%
Middle East and North Africa	5	9%	377	3%
Governance	54	100%	14,643	100%
Private	41	76%	10,687	73%
Public	13	24%	3,956	27%
Type of institution	54	100%	14,643	100%
University	39	72%	12,166	83%
Technical and vocational education and training	15	28%	2,477	17%

TABLE A2

Descriptive Statistics (number of respondents and (share of category))

	Overall survey respondents		Subset of surveys with additional questions on experience and working in field	
	Female	Male	Female	Male
	8,205 (56.3%)	**6,358 (43.6%)**	**3,086 (56%)**	**2,379 (44%)**
Selected age ranges				
18 to 25	4,459 (54.5%)	2,415 (38.0%)	1,825 (59.1%)	988 (40.1%)
26 to 30	1,956 (23.9%)	2,030 (32.0%)	608 (19.7%)	644 (27.1%)
31 to 45	1,418 (17.3%)	1,513 (23.8%)	506 (16.4%)	570 (24.0%)
46 to 60	331 (4.0%)	359 (5.7%)	133 (4.3%)	184 (7.7%)

	Overall survey respondents		Subset of surveys with additional questions on experience and working in field	
	Female	**Male**	**Female**	**Male**
Selected Fields of Education				
Business and Law	3,774 (47.9%)	2,361 (38.8%)	1,533 (49.7%)	922 (38.8%)
Education	330 (4.2%)	124 (2.0%)	267 (8.7%)	95 (4.0%)
Engineering	761 (9.7%)	1,376 (22.6%)	332 (10.8%)	588 (24.7%)
Health	834 (10.6%)	326 (5.4%)	167(5.4%)	56 (2.4%)
Humanities and Arts	285 (3.6%)	235 (3.9%)	67 (2.2%)	34 (1.4%)
Information and Communication Technology	507 (6.4%)	795 (13.1%)	218 (7.1%)	386 (16.2%)
Natural Sciences	114 (1.4%)	114 (1.9%)	15 (0.5%)	16 (0.7%)
Services	184 (2.3%)	87 (1.4%)	130(4.2%)	61 (2.6%)
Social Sciences	1,042 (13.2%)	624 (10.2%)	321 (10.4%)	205(8.6%)
Employment Status				
Employed full time	4,114 (50.1%)	3,558 (56.0%)	1,403 (45.5%)	1,311 (55.1%)
Employed part time	1,093 (13.3%)	728 (11.5%)	313 (10.1%)	209 (8.8%)
Not employed but looking for work	2,565 (31.3%)	1,711 (26.9%)	1,155 (37.4%)	707 (29.7%)
Not employed and not looking for work	183 (2.2%)	171 (2.7%)	72 (2.3%)	51 (2.1%)
Studying full time	121 (1.5%)	80 (1.3%)	121 (3.9%)	80 (3.4%)
No response	129 (1.6%)	110 (1.7%)	22 (0.7%)	21 (0.9%)
Earnings Category				
Lowest	1,318 (25.7%)	737 (17.8%)	307 (18.0%)	150 (10.0%)
Second lowest	2,069 (40.4%)	1,341 (32.5%)	757 (44.4%)	448 (29.8%)
Third highest	1,002 (19.6%)	940 (22.8%)	388 (22.8%)	391 (26.0%)
Second highest	481 (9.4%)	634 (15.3%)	161 (9.4%)	229 (15.2%)
Highest	254 (5.0%)	479 (11.6%)	92 (5.4%)	268 (19.0%)

Note: Overall sample has 14,643 respondents. This includes 16 respondents who did not respond on their gender (not shown above). The age ranges and fields of education show selected categories and so do not include categories with very low response rates—for instance, graduates that are less than 18 years old (less than five respondents). Earnings data was unavailable for 5,124 females and 4,131 males in the overall sample and unavailable for 1,381 females and 875 males in the sub-sample of surveys. The results do not show field of study "other" which is reported by around 100 respondents. The third and fourth columns report for the subset of surveys that includes questions on prior years of experience and employment status of graduates. This subset of surveys was used for regressions (I), (II) and (V) in Table A3.

Limitations of Data

The surveys were implemented at institutions where IFC provided the Vitae advisory program on employability. As such, the institutions were not selected randomly and so cannot be expected to be representative of the institutions in these countries. The data was collected by emailing recent graduates, only some of whom responded. Overall, the response rate is 6 percent on average for the institutions covered. Among those who answered the survey, only some answered the questions on income and employment status. This suggests the potential for self-selection bias. To the extent that self-selection is related to variables in the survey such as field of study, the use of regression can control for the bias.

Another limitation with the data is the way that income is measured. Income thresholds are not consistent across institutions. Income scales were set at each institution with the intention that a broadly equal number of graduates fall into each category. Once the scale has been determined for one institution, the same scale is used for subsequent surveys in the country. This method of categorization introduces differences across institutions, and it turns out a tendency for more respondents to report incomes in the lowest two categories than in the top two (as can be seen in Table A2). To the extent that this methodology introduces measurement error in this dependent variable, the efficiency of the statistical analysis may be lower than it otherwise would have been.

Given that the Vitae surveys are from a non-random set of institutions and focus only on recent graduates, a comparison to a broader sample can offer useful context for the analysis. To provide this context, the study turned to harmonized economic data maintained by the World Bank. This data is collected within each of the countries represented by an institution in the Vitae survey data. These harmonized data contain information on education, age, and employment status that can be compared to similar information from the Vitae surveys. For purposes of this comparison, the harmonized data were limited to individuals with at least some tertiary education and weighted to reflect each country's representation in the Vitae survey. For example, South Africa represented 15 percent of Vitae survey observations and so is given that weight in the comparison's averages.[***]

The results of this comparison suggest that Vitae survey graduates are substantially younger than those with some tertiary education in the broader population. As Table A2 shows, nearly half of Vitae survey members are ages 18 to 25, and another quarter are 26 to 30. So, three quarters of the Vitae survey sample is under 30. In the broader sample of economic data—summarized in Table A4 —just 41 percent of individuals were under 30. This age gap is hardly surprising given the Vitae surveys' focus only on recent graduates.

[***] Within countries, all calculations used weights that captured how many households in the population the sampled individual's household represented. Once country-specific weighted averages were calculated (e.g., share employed full time in South Africa), these averages were then weighted by the Vitae sample shares to arrive at a comparable number.

TABLE A3

Descriptives from World Bank Data, Sample Members 18 and Older with Some Tertiary Education, Weighted by Country Share of Vitae Sample

	Full Sample	Female	Male
Share of Observations	**100%**	**55.1%**	**44.9%**
Average Age	**36.9**	**36.0**	**38.1**
Age Groups			
18 to 25	24.8%	26.9%	22.4%
26 to 30	16.7%	17.2%	16.0%
31 to 45	33.1%	33.0%	33.3%
46 to 60	18.1%	17.0%	19.5%
61 Plus	7.3%	6.0%	8.8%
Employment Status			
Employed	69.4%	64.6%	75.4%
Of Employed, <30 Hours	17.1%	20.4%	13.1%
Not Employed, but Seeking	5.9%	6.3%	5.5%
Not in Labor Force	24.6%	29.1%	19.1%

Source: Analysis of World Bank labor economic data from the years 2005–2017 depending on the country being analyzed. The most recent available year of data was chosen for each country with the exception of Ghana, where employment data for the most recent year was not usable.

Notes:

1. "By Reported Gender" columns exclude observations where gender was not reported.

2. Presence of "Some Tertiary/Secondary" identified based on coded response of "Some tertiary/post-secondary" or "post-secondary."

3. Percent for "Of Employed, <30 Hours" is a share only of those employed. The weekly hours worked question contains responses for roughly half the working sample. Observations in Tunisia, Senegal, and Zambia did not have data on hours worked and are excluded from this calculation.

4. Observations weighted within country and then averages calculated across country with weights according to Vitae sample representation.

5. The analysis included 443,682 observations.

As a likely consequence of this age difference, members of the study sample are less likely to be employed full time and more likely to be unemployed but seeking work than the general population. Just over 52 percent of the study sample is working full-time, compared to 58 percent in the larger population. And 29 percent of the Vitae sample is unemployed but seeking work, compared to just 6 percent in the broader population. However, Vitae sample members are substantially less likely to be out of the labor force entirely (i.e., not looking for work). Just 5 percent of Vitae sample members were out of the labor force, but nearly a quarter of the broader sample. Put simply, this study's sample from the Vitae surveys should be viewed as working or actively seeking work as it begins to make its way into the labor force. Indeed, this fact is illustrated by the growing share moving into their field of study in Figure 4.

Given this study's focus on gender gaps, a comparison along the gender dimension also provides useful context for the sample. The Vitae survey respondents are 56 percent female and 44 percent male, similar to the distribution in the broader population at 55 percent and 45 percent respectively. However, the gender employment gap among the Vitae survey sample appears smaller. In the study sample, the female-to-male ratio of full-time employment is 0.9. In the broader sample, it is significantly lower, at 0.78. The share of individuals out of the labor force is also much more equal in the Vitae survey sample. In the study sample, women are slightly less likely to be out of the labor force. In the broader population, they are 1.5 times more likely to be out of the labor force. So, in addition to representing a group of people at an early point in their career, the study sample also represents a more equally employed group than in the broader population.

Annex B

Regression Results

To answer the three main questions of the study, a series of five ordered logistic regressions were run to evaluate the association between gender and earnings, unemployment, and being employed in the field studied. Specifically, in Table A4, regressions I and II examine earnings (categories running from 1 being low to 5 being high), III and IV employment (not employed, employed part time, employed full time), and V field of study (outside of field, in related field, in field). The regressions control for factors that could be expected to contribute to these outcomes. For example, the earnings regressions include age and family background, the government status of employment, the full-time status of employment, and the individual's field of study. Regression I additionally includes data on experience and whether the individual is working in their field of study for a subsample of individuals asked these questions (see Box 1). Regression II uses a larger sample which did not include these questions but takes advantage of more observations to include interactions with gender for key variables. Regressions III and IV repeat this basic pattern looking at employment status, whereas regression V only focuses on the subsample of individuals asked whether they are working in their field of study.

In all of the regressions, low outcomes are "bad" (e.g., being in a low earnings category) and higher outcomes are "good" (e.g., working in a high earnings category). The results reported in Table A4 are odds ratios. An odds ratio less than one suggests that an independent variable is less associated with these higher values of the dependent variable. For instance, the coefficient on female is less than one for the regressions on earnings (regression I and II), which suggests that female respondents are less likely than men to report that they are in higher earning categories.

The logit models were performed using an ordinal generalized linear model (OGLM) as this framework allowed heteroscedasticity in the errors to be explicitly modeled. In general, ordered logit models assume homoscedasticity i.e., that the error variances are constant once accounting for the independent variables. However, if this assumption of homoscedasticity is violated, the ordered logit model would report incorrect standard errors and also biased parameters. In the models included in Table A4, heteroscedasticity was modeled as a function of the individual's institution. In other words, the model allows for the possibility that the outcomes associated with some institutions are harder to predict than others, perhaps because of the country the institution is in or because of the time individuals were surveyed at that institution.

In addition to being used to model heteroscedasticity, the institution variable is also included across all regressions as an independent variable. Since the Vitae surveys were only conducted in one year, and institutions are only active in one country, controlling on institution implicitly controls for the year in which the survey was implemented

and the country in which the institution is based. Results for institutions are not reported in Table A4 but are available upon request.

Turning to the results and starting with the earnings regressions, regression I has the advantage of including data on experience, but because of the much smaller sample includes fewer interactions. The main takeaway is that controlling for age, conditions of employment, field of study, and experience, recent female graduates are significantly less likely to be in high earning categories than males. Unsurprisingly, individuals with more experience prior to entering tertiary education or with more years since graduation are more likely to be in high earnings categories, as are individuals working in their field of study.

The coefficients from logit regressions are difficult to interpret, so Average Marginal Effects (AMEs) were also calculated. AMEs summarize the regression by showing how the average predicted probability of a given outcome would change if the entire sample had one value for a variable (e.g., male) that was then changed to another value (e.g., female). These AMEs are shown in Tables A5 for bad outcomes (e.g., lowest earnings category) and then A6 for good outcomes (e.g., highest two earnings categories). Of note from regression I is the fact that females are 4.7 percent more likely to be in the lowest earnings category when compared to otherwise similar males. Another finding of interest is that those who are the first in their family to attend college are 2.4 percentage points more likely to be in the lowest earnings category. On the other hand, those that entered college with 5+ years of experience are 7.3 percent less likely to be in this low category and people working in their field of study are 6.5 percentage points less likely to be low earners. Table A6 shows how these patterns are reversed for the highest earning categories.

Regression II does not contain the detailed experience and field-related variables of regression I but includes more interactions between gender and various characteristics owing to the larger available sample. These interactions imply that the gap between female and male earners actually increases with age, as the odds ratio on interactions between older age groups and gender are significantly less than 1. It is also worth noting that the interactions between female and government employment and female and TVET are both above 1 and significant, suggesting females in government and females who graduate from TVETs have smaller earning gaps.

With respect to AMEs, Table A5 shows that once interactions are taken into account, females are 5 percentage points more likely to be in the lowest earning category, and Table A6 that they are 6.4 percentage points less likely to be in the highest two. It is worth noting that while Tables A5 and A6 incorporate the interaction effects inherent to regression II, they do not clearly illustrate these interactions' impact—for example, the coefficients on female represent the weighted average of all the age groups, weighted by the share in each group. Figures 2 and 5 above incorporate these interactions to show how the earnings gap differs across fields of study and widens with the age of recent graduates. These results are broadly comparable to those arising from the large literature on pay gaps between men and women. The gaps shown here are smaller than the overall pay gaps typically found. This though

is consistent with the literature that finds that pay gaps are smaller for recent entrants to the labor market, college educated workers, and those working in the public sector.[91]

The second set of regressions (III and IV) examine how unemployment, part-time employment, and full-time employment vary across people in the labor market. In regression III, owing to the smaller sample size, few variables are significant. But regression IV suggests that while younger recent female graduates are not significantly less likely to be employed than younger males, older graduates do have lower probabilities of employment as indicated by gender-age interactions with coefficients significantly less than 1. The AME calculations from regression IV suggest that females are 4.3 percentage points more likely to be unemployed than men (Table A5) and 5.2 percentage points less likely to work full time (Table A6). Again, those that are first in their families to attend college also seem to be at a disadvantage, being 2.4 percentage points more likely to be unemployed and 4.0 percentage points less likely to be employed full time. Regression IV seems to also confirm one of the more interesting findings from regression II. Again, graduating from a TVET seems to increase the relative probability of good employment outcomes for females.

As mentioned, regression I suggested that working in a field associated with one's field of study is associated with higher earnings. So, regression V explores correlates of working in one's field to see what predicts this characteristic of higher-earning individuals. With respect to gender, the results are somewhat inconclusive. The odds ratio on female is suggestive that women have more difficulty making it into their field of study but does not rise to the level of traditional statistical significance (p=0.14). Average marginal effects are slightly more conclusive from a significance perspective, with women being 1.7 percentage points more likely to not be working in their field of study and 2.9 percentage points less likely to be exactly in their field. These marginal effects are near significant at the 10-percent level (p=0.104). The results do point to the fact that people who had more experience before going into college are significantly more likely to work in their field. Also of note—and as illustrated by Figure 4—is the fact that graduates are significantly more likely to make their way into their field of study the further they are out from graduation. Indeed, Table A6 suggests that someone four years out of school is 13.5 percentage points more likely to be in their field of study than someone just out of school.

TABLE A4

Odds Ratios and Standard Errors for Ordered Logit on Indicated Dependent Variables

	Earnings Category (1-5)		Employment (Unemployed, Part, Full)		In Field (Not, Related to field, Yes)
	I	II	III	IV	V
Number of Observations	**3,091**	**8,858**	**4,922**	**13,242**	**3,098**
1. Demographics					
Female	0.498***	0.526***	0.891	0.565	0.763
	(0.0872)	(0.0927)	(0.0949)	(0.265)	(0.141)
Age (Base = 18-25, <18, >60 not shown)					
26-30	1.518***	1.294***	1.096	1.998***	0.603*
	(0.228)	(0.0687)	(0.111)	(0.359)	(0.169)
31-45	3.013***	2.576***	1.382	9.499***	0.343**
	(0.827)	(0.309)	(0.373)	(3.898)	(0.151)
46-60	3.887***	4.073***	1.107	25.38***	0.684
	(1.435)	(0.731)	(0.194)	(16.40)	(0.273)
Age x Gender					
Female x 26-30		0.994		0.783	
		(0.0585)		(0.134)	
Female x 31-45		0.816***		0.622**	
		(0.0556)		(0.129)	
Female x 46-60		0.806*		0.415**	
		(0.0912)		(0.175)	
First in Family to Attend	0.711***	0.852***	0.863	0.785***	0.684*
	(0.0825)	(0.0253)	(0.110)	(0.0636)	(0.136)
2. Nature of Employment					
Full Time (Base Case = Part Time)	7.091***	2.657***			
	(3.100)	(0.309)			
Government Employer	0.942	1.099**			
	(0.102)	(0.0513)			

	Earnings Category (1-5)		Employment (Unemployed, Part, Full)		In Field (Not, Related to field, Yes)
	I	II	III	IV	V
Female x Government Employer		1.204***			
		(0.0756)			
3. Education Info					
Graduate of a TVET		1.044		1.123	
		(0.214)		(0.476)	
Female x Graduate of a TVET		1.153**		1.479*	
		(0.0822)		(0.301)	
Field of Study (Base = Education)					
Business and Law	1.318	0.830	1.210	0.818	0.372**
	(0.296)	(0.112)	(0.216)	(0.336)	(0.177)
Engineering	1.790**	1.053	1.310	0.904	0.597
	(0.477)	(0.143)	(0.325)	(0.385)	(0.267)
Health	1.522	0.714**	0.956	0.315**	2.900
	(0.496)	(0.113)	(0.142)	(0.155)	(1.986)
Humanities and Arts	1.237	0.870	1.096	0.422*	2.794
	(0.590)	(0.145)	(0.193)	(0.209)	(2.197)
Information and Communications Technology	2.225***	0.899	1.747	0.531	0.815
	(0.676)	(0.127)	(0.798)	(0.232)	(0.375)
Natural Sciences	1.276	0.625**	7.763	0.142***	7.152
	(0.778)	(0.124)	(14.18)	(0.0879)	(9.822)
Other	1.765	1.116	1.743	1.534	1.340
	(1.441)	(0.234)	(1.139)	(1.128)	(2.035)
Services	0.937	0.665*	1.001	0.0850**	0.104**
	(0.308)	(0.142)	(0.233)	(0.0902)	(0.0962)
Social Sciences	1.521	0.802	0.917	0.415*	0.376*
	(0.460)	(0.117)	(0.153)	(0.190)	(0.210)
Gender x Field of Study					
Female x Business and Law		1.438**		1.139	
		(0.239)		(0.532)	

	Earnings Category (1-5)		Employment (Unemployed, Part, Full)		In Field (Not, Related to field, Yes)
	I	II	III	IV	V
Female x Engineering		1.415**		1.163	
		(0.244)		(0.582)	
Female x Health		1.762***		1.240	
		(0.341)		(0.629)	
Female x Humanities and Arts		1.167		1.656	
		(0.240)		(0.934)	
Female x Information and Communications Technology		1.386*		1.208	
		(0.250)		(0.604)	
Female x Natural Sciences		1.487*		3.563*	
		(0.356)		(2.341)	
Female x Other		1.296		1.108	
		(0.343)		(1.010)	
Female x Services		1.452		2.442	
		(0.370)		(2.635)	
Female x Social Sciences		1.468**		1.307	
		(0.259)		(0.641)	
4. Experience (Subsample Only)					
Prior Work Experience (Base = 1 - 2 Years)					
No experience	0.722**		0.483		0.465**
	(0.106)		(0.281)		(0.146)
3-5 Years	1.440*		1.374		2.956**
	(0.309)		(0.392)		(1.461)
Over 5 Years	4.366***		2.419		5.136***
	(1.544)		(1.718)		(2.987)
Years Since Graduation (Base = 0 Years)					
1 Year	1.493***		1.373		1.280
	(0.222)		(0.360)		(0.279)
2 Years	1.870***		1.731		1.147

	Earnings Category (1-5)		Employment (Unemployed, Part, Full)		In Field (Not, Related to field, Yes)
	I	II	III	IV	V
	(0.371)		(0.776)		(0.300)
3 Years	2.356***		2.227		1.723*
	(0.565)		(1.436)		(0.536)
4 Years	2.207**		2.730		3.604**
	(0.750)		(2.241)		(2.286)
5. Field of Study (Base = Not, Subsample Only)					
Related to Field of Study	1.658***				
	(0.292)				
In Field of Study	2.450***				
	(0.566)				
Pseudo R-squared	0.169	0.177	0.130	0.0845	0.0477

Notes: Models allow for error variance that differs across institutions. Model V drops two schools with fewer than 20 observations to facilitate model convergence.

TABLE A5

Average Marginal Effects of Characteristic on Probability of Being in Indicated Category, Poor Outcomes

	Lowest Earnings		Unemployed		Not in Field
	I	II	III	IV	V
Number of Observations	**3,091**	**8,858**	**4,922**	**13,242**	**3,098**
1. Demographics					
Female	0.0465***	0.0507***	0.0241**	0.0426***	0.0168
	(0.00635)	(0.00523)	(0.0122)	(0.00667)	(0.0103)
Age (Base = 18-25, <18, >60 not shown)					
26-30	-0.0305***	-0.0585***	0.0241**	-0.0556***	0.0303**
	(0.00894)	(0.00686)	(0.0122)	(0.00869)	(0.0134)

	Lowest Earnings		Unemployed		Not in Field
	I	II	III	IV	V
31-45	-0.0705***	-0.151***	-0.0196	-0.174***	0.0691***
	(0.00927)	(0.00656)	(0.0152)	(0.00942)	(0.0174)
46-60	-0.0825***	-0.196***	-0.0677***	-0.220***	0.0223
	(0.0120)	(0.00726)	(0.0182)	(0.0129)	(0.0232)
First in Family to Attend	0.0235***	0.0329***	0.0309***	0.0219***	0.0239**
	(0.00630)	(0.00498)	(0.0114)	(0.00642)	(0.00999)
2. Nature of Employment					
Full Time (Base Case = Part time employed)	-0.174***	-0.262***			
	(0.0152)	(0.0103)			
Government Employer	0.00410	-0.0413***			
	(0.00740)	(0.00565)			
3. Field of Study (Base = Education)					
Business and Law	-0.0206	-0.0120	-0.0404**	0.0105	0.0586***
	(0.0169)	(0.0171)	(0.0201)	(0.0202)	(0.0192)
Engineering	-0.0410**	-0.0549***	-0.0569**	0.000822	0.0285
	(0.0179)	(0.0177)	(0.0265)	(0.0224)	(0.0224)
Health	-0.0305	-0.00678	0.00969	0.0946***	-0.0459*
	(0.0226)	(0.0194)	(0.0309)	(0.0229)	(0.0246)
Humanities and Arts	-0.0160	0.00726	-0.0195	0.0502*	-0.0446
	(0.0350)	(0.0236)	(0.0342)	(0.0257)	(0.0286)
Information and Communications Technology	-0.0541***	-0.0234	-0.114***	0.0459**	0.0108
	(0.0184)	(0.0194)	(0.0283)	(0.0229)	(0.0237)
Natural Sciences	-0.0183	0.0475*	-0.313***	0.115***	-0.0735**
	(0.0441)	(0.0279)	(0.0664)	(0.0302)	(0.0353)
Other	-0.0402	-0.0549*	-0.114	-0.0390	-0.0143
	(0.0518)	(0.0281)	(0.0928)	(0.0393)	(0.0710)
Services	0.00513	0.0360	-0.000176	0.190***	0.159***
	(0.0261)	(0.0291)	(0.0498)	(0.0564)	(0.0453)
Social Sciences	-0.0305	-0.00742	0.0186	0.0646***	0.0580**
	(0.0214)	(0.0190)	(0.0326)	(0.0230)	(0.0277)

	Lowest Earnings		Unemployed		Not in Field
	I	II	III	IV	V
4. Experience (Subsample Only)					
Prior Work Experience (Base = 1 - 2 Years)					
No experience	0.0236***		0.166***		0.0529***
	(0.00900)		(0.0158)		(0.0145)
3-5 Years	-0.0229*		-0.0598**		-0.0577***
	(0.0122)		(0.0245)		(0.0171)
Over 5 Years	-0.0729***		-0.142***		-0.0801***
	(0.00866)		(0.0189)		(0.0143)
Years Since Graduation (Base = 0 Years)					
1 Year	-0.0295***		-0.0689***		-0.0158
	(0.00897)		(0.0161)		(0.0137)
2 Years	-0.0442***		-0.117***		-0.00893
	(0.0104)		(0.0201)		(0.0168)
3 Years	-0.0578***		-0.166***		-0.0335**
	(0.0102)		(0.0220)		(0.0167)
4 Years	-0.0541***		-0.201***		-0.0714***
	(0.0180)		(0.0346)		(0.0246)
5. Field of Study (Base = Not, Subsample Only)					
Related to Field of Study	-0.0395***				
	(0.0114)				
In Field of Study	-0.0652***				
	(0.0107)				

TABLE A6

Average Marginal Effects of Characteristic on Probability of Being in Indicated Category, Good Outcomes

	Highest Earnings		Employed Full Time		In Field
	I	II	III	IV	V
Number of Observations	**3,091**	**8,858**	**4,922**	**13,242**	**3,098**
1. Demographics					
Female	-0.0734***	-0.0636***	-0.0247**	-0.0518***	-0.0287
	(0.0101)	(0.00535)	(0.0126)	(0.00769)	(0.0175)
Age (Base = 18-25, <18, >60 not shown)					
26-30	0.0409***	0.0416***	-0.0247**	0.0599***	-0.0531**
	(0.0122)	(0.00515)	(0.0126)	(0.00933)	(0.0229)
31-45	0.120***	0.182***	0.0200	0.207***	-0.111***
	(0.0173)	(0.00883)	(0.0155)	(0.0110)	(0.0263)
46-60	0.152***	0.324***	0.0707***	0.273***	-0.0398
	(0.0295)	(0.0188)	(0.0194)	(0.0173)	(0.0399)
First in Family to Attend	-0.0345***	-0.0315***	-0.0315***	-0.0252***	-0.0403**
	(0.00909)	(0.00468)	(0.0116)	(0.00738)	(0.0167)
2. Nature of Employment					
Full Time (Base Case = Part)	0.158***	0.147***			
	(0.00889)	(0.00448)			
Government Employer	-0.00607	0.0378***			
	(0.0108)	(0.00660)			
3. Field of Study (Base = Education)					
Business and Law	0.0264	-0.00541	0.0407**	-0.0129	-0.106***
	(0.0201)	(0.0173)	(0.0201)	(0.0248)	(0.0386)
Engineering	0.0582**	0.0430**	0.0578**	-0.00134	-0.0553
	(0.0229)	(0.0185)	(0.0271)	(0.0274)	(0.0446)
Health	0.0411	-0.0155	-0.00957	-0.108***	0.109*
	(0.0311)	(0.0194)	(0.0305)	(0.0273)	(0.0593)
Humanities and Arts	0.0201	-0.0143	0.0195	-0.0598*	0.105
	(0.0460)	(0.0220)	(0.0343)	(0.0305)	(0.0707)
Information and Communications Technology	0.0827***	0.00707	0.120***	-0.0544**	-0.0218
	(0.0251)	(0.0192)	(0.0300)	(0.0275)	(0.0484)
Natural Sciences	0.0232	-0.0524**	0.371***	-0.129***	0.189*
	(0.0595)	(0.0225)	(0.0939)	(0.0338)	(0.104)
Other	0.0567	0.0466	0.119	0.0485	0.0309

	Highest Earnings		Employed Full Time		In Field
	I	II	III	IV	V
	(0.0863)	(0.0334)	(0.103)	(0.0498)	(0.159)
Services	-0.00585	-0.0442*	0.000174	-0.203***	-0.235***
	(0.0297)	(0.0243)	(0.0494)	(0.0540)	(0.0575)
Social Sciences	0.0410	-0.0103	-0.0183	-0.0756***	-0.105**
	(0.0285)	(0.0190)	(0.0320)	(0.0275)	(0.0504)
4. Experience (Subsample Only)					
Prior Work Experience (Base = 1 - 2 Years)					
No experience	-0.0316**		-0.173***		-0.0809***
	(0.0127)		(0.0174)		(0.0228)
3-5 Years	0.0402*		0.0722**		0.115***
	(0.0227)		(0.0301)		(0.0354)
Over 5 Years	0.186***		0.180***		0.170***
	(0.0222)		(0.0243)		(0.0293)
Years Since Graduation (Base = 0 Years)					
1 Year	0.0385***		0.0693***		0.0261
	(0.0114)		(0.0164)		(0.0225)
2 Years	0.0621***		0.120***		0.0145
	(0.0150)		(0.0213)		(0.0273)
3 Years	0.0881***		0.175***		0.0576**
	(0.0161)		(0.0244)		(0.0292)
4 Years	0.0807**		0.217***		0.135***
	(0.0321)		(0.0407)		(0.0515)
5. Field of Study (Base = Not, Subsample Only)					
Related to Field of Study	0.0466***				
	(0.0126)				
In Field of Study	0.0880***				
	(0.0123)				

Annex C

Gross Enrollment Ratio, Tertiary Education, By Select Country and Year (%)

	2000	2010	2017	2018	2019	2020	2021	2022
Argentina	**54.33**	**74.19**	**89.23**	**90.97**	**95.08**	**99.27**	**107.13**	
Female	*66.84*	*90.16*	*112.83*	*114.81*	*120.82*	*127.16*	*140.30*	
Male	*42.29*	*58.89*	*66.69*	*68.20*	*70.51*	*72.65*	*75.48*	
Botswana	**6.77**	**18.96**	**22.44**		**22.97**	**24.01**	**22.90**	
Female	*6.27*		*26.55*		*27.43*	*29.34*	*28.00*	
Male	*7.30*		*18.38*		*18.59*	*18.77*	*17.88*	
Brazil			**50.03**	**51.19**	**52.62**	**54.57**	**56.83**	
Female			*57.37*	*59.10*	*60.99*	*64.55*	*67.81*	
Male			*42.81*	*43.51*	*44.45*	*45.06*	*46.35*	
Chile	**35.43**	**66.34**	**89.92**	**91.20**	**92.07**	**89.11**	**96.22**	
Female	*33.87*	*68.75*	*96.29*	*98.30*	*99.34*	*96.77*	*105.96*	
Male	*36.95*	*64.01*	*83.76*	*84.32*	*85.03*	*81.70*	*86.79*	
China	**7.56**	**25.29**	**51.58**	**54.01**	**57.28**	**62.24**	**67.39**	**71.98**
Female		*26.42*	*57.33*	*60.32*	*64.11*	*68.91*	*73.92*	*78.09*
Male		*24.25*	*46.58*	*48.53*	*51.37*	*56.49*	*61.78*	*66.74*
Colombia	**25.51**	**41.53**	**58.40**	**57.32**	**56.67**	**55.73**	**58.32**	
Female	*26.19*	*43.08*	*62.73*	*61.54*	*60.51*	*59.84*	*63.16*	
Male	*24.82*	*39.99*	*54.18*	*53.21*	*52.92*	*51.73*	*53.60*	
Côte d'Ivoire		**7.47**	**9.47**		**9.91**	**9.78**		
Female		*5.06*	*7.80*		*8.58*	*8.72*		
Male		*9.87*	*11.12*		*11.22*	*10.82*		
Costa Rica			**54.46**	**52.87**	**54.72**			
Female			*61.16*	*58.25*	*60.47*			
Male			*48.09*	*47.72*	*49.23*			
Egypt		**30.51**	**33.16**	**36.72**		**40.01**		**37.82**
Female		*29.29*	*33.96*	*37.72*		*39.75*		*38.03*
Male		*31.66*	*32.41*	*35.77*		*40.26*		*37.61*

	2000	2010	2017	2018	2019	2020	2021	2022
Ghana			**16.37**	**16.02**	**17.43**	**18.65**	**19.19**	**20.39**
Female			*13.53*	*13.66*	*15.74*	*17.44*	*18.29*	*19.77*
Male			*19.15*	*18.33*	*19.09*	*19.84*	*20.07*	*21.00*
Jordan	**29.33**	**37.20**	**28.43**	**32.31**	**31.60**	**32.67**	**33.49**	**36.01**
Female	*31.02*	*39.63*	*31.55*	*36.15*	*34.96*	*36.47*	*38.26*	*41.33*
Male	*27.73*	*34.87*	*25.59*	*28.74*	*28.44*	*29.04*	*28.91*	*30.86*
Kenya	**2.77**		**11.89**	**18.09**	**10.57**	**19.35**	**19.99**	**20.48**
Female	*1.94*		*9.96*	*15.03*	*15.40*	*15.82*	*16.44*	*17.99*
Male	*3.59*		*13.87*	*21.24*	*22.36*	*22.99*	*23.63*	*23.04*
Mali	**1.83**	**5.67**	**4.16**	**4.97**	**4.73**			
Female	*1.20*	*3.31*	*2.51*	*3.19*	*3.17*			
Male	*2.45*	*7.97*	*5.78*	*6.70*	*6.25*			
Mexico	**20.53**	**27.17**	**40.34**	**41.64**	**43.04**	**45.17**	**45.65**	
Female	*19.44*	*26.94*	*40.87*	*42.58*	*44.35*	*47.06*	*48.47*	
Male	*21.67*	*27.40*	*39.82*	*40.71*	*41.76*	*43.31*	*42.89*	
Morocco	**10.04**	**14.08**	**33.74**	**35.62**	**38.02**	**40.02**	**42.82**	**46.18**
Female	*8.44*	*13.54*	*32.97*	*35.11*	*38.26*	*40.84*	*44.91*	*49.13*
Male	*11.65*	*14.61*	*34.49*	*36.12*	*37.79*	*39.22*	*40.80*	*43.31*
Peru	**33.33**		**71.25**					
Female			*73.86*					
Male			*68.59*					
Senegal		**7.59**	**11.77**	**13.06**	**13.38**	**14.23**	**15.73**	**16.81**
Female		*5.63*	*8.90*	*10.60*	*11.52*	*12.53*	*15.07*	*16.57*
Male		*9.56*	*14.64*	*15.51*	*15.24*	*15.92*	*16.39*	*17.04*
South Africa		**16.58**	**21.42**	**23.39**	**24.02**	**25.13**	**25.24**	
Female			*25.35*	*27.94*	*28.93*	*30.91*	*31.41*	
Male			*17.58*	*18.94*	*19.22*	*19.49*	*19.25*	
Tunisia	**17.82**	**34.64**	**31.02**	**31.14**	**31.82**	**33.13**	**33.90**	**37.80**
Female	*18.24*	*41.71*	*39.31*	*39.31*	*40.34*	*41.98*	*42.71*	*47.95*
Male	*17.41*	*27.60*	*22.76*	*22.99*	*23.33*	*24.31*	*25.17*	*27.81*
Uganda	**2.61**	**3.90**						
Female	*1.75*	*3.41*						
Male	*3.49*	*4.40*						

Source: UNESCO Institute for Statistics. Bulk Data Download Service. Accessed September 19, 2023.

Annex D

Share of Students in Upper-Secondary Education, TVET, Gender, By Country (%)

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Brazil	**2.89**	**3.29**	**3.76**	**3.50**	**3.40**	**3.43**	**3.73**	**3.83**	**3.92**	**3.89**	
Female	*3.23*	*3.63*	*4.14*	*3.82*	*3.74*	*3.80*	*4.19*	*4.30*	*4.39*	*4.46*	
Male	*2.56*	*2.96*	*3.37*	*3.19*	*3.07*	*3.06*	*3.28*	*3.37*	*3.47*	*3.34*	
Chile		**17.27**	**17.50**	**17.53**	**17.38**	**17.13**	**14.00**	**13.88**	**12.90**	**12.81**	
Female		*17.13*	*17.35*	*17.38*	*17.25*	*17.03*	*14.32*	*14.22*	*13.28*	*13.37*	
Male		*17.41*	*17.65*	*17.68*	*17.50*	*17.23*	*13.69*	*13.55*	*12.53*	*12.28*	
Colombia									**9.12**	**9.21**	
Female									*9.44*	*9.72*	
Male									*8.82*	*8.72*	
Côte d'Ivoire				**1.87**	**1.81**	**1.97**	**1.99**	**1.94**	**1.94**	**1.94**	
Female					*1.78*	*1.73*	*1.86*	*1.90*	*1.82*	*1.79*	*1.80*
Male					*1.96*	*1.89*	*2.08*	*2.09*	*2.05*	*2.09*	*2.08*
Costa Rica	**4.08**	**5.68**	**6.75**	**7.40**	**7.44**	**7.11**	**7.34**	**8.89**		**8.96**	
Female	*4.31*	*6.13*	*7.29*	*7.90*	*7.96*	*7.55*	*7.89*	*9.32*		*9.49*	
Male	*3.87*	*5.25*	*6.24*	*6.93*	*6.95*	*6.69*	*6.82*	*8.48*		*8.45*	
Egypt			**9.60**		**10.00**	**10.28**	**10.63**	**10.83**	**11.31**	**11.49**	
Female			*8.49*		*8.66*	*8.80*	*9.09*	*9.30*	*9.57*	*9.56*	
Male			*10.66*		*11.26*	*11.68*	*12.08*	*12.29*	*12.97*	*13.33*	
Ghana		**1.13**	**0.75**	**0.77**	**0.50**		**1.25**	**1.30**	**1.43**	**1.46**	
Female		*0.71*	*0.43*	*0.39*	*0.35*		*0.63*	*0.70*	*0.74*	*0.76*	
Male		*1.55*	*1.06*	*1.16*	*0.64*		*1.85*	*1.89*	*2.11*	*2.15*	
Jordan		**2.00**	**1.71**			**1.35**	**1.16**	**1.17**	**1.23**	**1.33**	**1.36**
Female		*1.38*	*1.25*			*1.16*	*0.96*	*1.02*	*1.12*	*1.21*	*1.25*
Male		*2.58*	*2.14*			*1.52*	*1.35*	*1.31*	*1.33*	*1.45*	*1.47*
Mali		**3.41**	**3.90**	**3.61**	**3.76**	**3.66**	**3.40**				
Female		*2.90*	*2.87*	*3.00*	*3.13*	*2.96*	*2.81*				
Male		*3.92*	*4.91*	*4.20*	*4.37*	*4.34*	*3.97*				
Mexico	**2.88**	**11.64**	**11.78**	**12.25**	**12.49**	**12.50**	**12.72**	**12.78**	**12.08**	**11.13**	
Female	*2.88*	*11.49*	*11.59*	*12.07*	*12.39*	*12.36*	*12.60*	*12.71*	*12.06*	*11.34*	
Male	*2.87*	*11.80*	*11.97*	*12.42*	*12.60*	*12.64*	*12.82*	*12.85*	*12.10*	*10.93*	

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Morocco							**7.68**	**7.81**	**7.54**	**5.76**	**5.75**
Female							*6.26*	*6.47*	*6.46*	*4.96*	*4.88*
Male							*9.05*	*9.11*	*8.60*	*6.54*	*6.59*
Peru	**0.40**	**0.60**	**0.50**	**0.48**	**0.56**	**0.68**	**0.74**	**0.73**	**0.61**	**0.60**	
Female	*0.38*	*0.55*	*0.51*	*0.53*	*0.58*	*0.69*	*0.78*	*0.76*	*0.66*	*0.68*	
Male	*0.41*	*0.64*	*0.48*	*0.44*	*0.54*	*0.66*	*0.70*	*0.69*	*0.56*	*0.53*	
Senegal											**2.09**
Female											*2.33*
Male											*1.86*
South Africa			**2.35**		**5.23**	**5.13**	**5.37**	**3.76**	**4.67**		
Female				*2.32*		*5.82*	*5.72*	*6.13*	*4.35*	*5.70*	
Male				*2.37*		*4.65*	*4.55*	*4.64*	*3.18*	*3.67*	

Glossary

Digital Gap
Within a population, the disparity between individuals with access to information and communication technologies (ICT) and who make use of services offered on the Web, and those without.[92] (European Centre for the Development of Vocational Training [Cedefop], 2023)

Employability
The capacity of a person to secure a job, to keep it, and to cope with changing technology and labor market conditions to build a career.[93] (International Labour Organization [ILO], 2015)

Employment
A person's work, occupation, job, or business.[94] (M. Wahba, 2013)

Gender Equality
This refers to the equal rights, responsibilities, and opportunities of women and men and girls and boys.[95]

Gender Gap
In the context of economic inequality, gender gap refers to the systemic differences in the social and economic roles and wages of women and men. There is a debate about how much this is the result of gender differences, lifestyle choices, or discrimination.[96] (ILO, 2015)

Gender Mainstreaming in Education
In the education sector, gender mainstreaming means the consistent use of a gender perspective at all stages of the development and implementation of policies, plans, programs, and projects. This would include not only the activities of governments, but also those of schools, colleges, and educational institutions, and, where appropriate, those of nongovernmental organizations and the private sector.[97] (Commonwealth Secretariat, 1999)

Gender Mainstreaming in Training
The process of assessing the implications for both sexes of any planned action in training, for example legislation, policies, and programs. Women and men's concerns and experiences are integrated into the design, implementation, and evaluation of training policies and programs. The objective is to make women and men benefit equally.[98] (ILO, 2006)

Gross Enrollment Ratio
Total enrollment in a specific level of education, regardless of age, expressed as a percentage of the eligible official school-age population corresponding to the same level of education in a given school year.[99] (UNESCO, 2024)

Graduate Tracer Studies
Standardized follow-up survey of education and training graduates, either in written or oral form, carried out after graduation or at the end of the learning action. These studies are common in higher education but are increasingly popular in vocational education and training.[100] (Cedefop, 2023)

Labor Force Participation Rate
The labor force participation rate is calculated as the labor force during a given reference period as a percentage of the working age population in the same reference period.[101] (ILO, 2016)

Post-Secondary Education
All education beyond secondary school level, including tertiary education (bachelor's, master's, and doctoral), as well as any post-secondary non-tertiary education (vocational or general education) that is delivered by universities, colleges, technical and vocational institutions, and community providers.[102] (International Standard Classification of Education, 2011)

Reskilling
Also known as retraining, reskilling involves training that enables individuals to acquire new skills, giving access either to a new occupation or to new professional activities.[103] (Cedefop, 2023)

Tertiary Education Institutions (TEIs)
Institutions such as universities that provide learning activities in specialized fields of education that build on secondary education. TEIs provide tertiary education, which includes what is commonly understood as academic education (bachelor's, master's, and doctoral levels) but also includes advanced vocational or professional education, such as short-cycle tertiary education.[104] (UNESCO Institute for Statistics, 2012)

Technical and Vocational Education and Training (TVET)
TVET is understood as comprising education, training, and skills development relating to a wide range of occupational fields, production, services, and livelihoods. TVET, as part of lifelong learning, can take place at secondary, post-secondary, and tertiary levels and includes work-based learning, continuing training, and professional development which may lead to qualifications.[105] (UNESCO, 2015)

Unemployment
As defined according to international standards, requires that a person meet three criteria for inclusion: they (a) did not work in the reference period; (b) were available to take up a job had one been offered in the week prior to the reference period; and (c) actively sought work within the past 30 days.[106] (ILO, 2015)

Upskilling
Short-term targeted training typically provided following initial education or training, and aimed at supplementing, improving, or updating knowledge, skills, and competences.[107] (Cedefop, 2023)

Endnotes

1. United National Educational, Scientific, and Cultural Organization (UNESCO). Institute for Statistics. Higher education figures at a glance. 2022. https://uis.unesco.org/sites/default/files/documents/f_unesco1015_brochure_web_en.pdf.
2. Malta, Vivian; Tavares, Marina; and Fabrizio, Stefania. VoxEU: CEPR. June 2020.
3. Posel, Dorrit and Casale, Daniela. UN Women. Gender, education, and labor market outcomes. October 2014.
4. Winkler, A. Women's labor force participation. IZA World of Labor 2022: 289 doi: 10.15185/izawol.289.v2
5. UNESCO's Global Education Coalition. A multi-sector Coalition to protect the right to education. https://www.unesco.org/en/global-education-coalition?hub=343.
6. UNESCO. Gross Enrollment Ratio.
7. UNESCO-UNEVOC. TVETipedia Glossary. Employability.
8. Hanson et al. The Burning Glass Institute. Talent Disrupted: College Graduates, Underemployment, and the Way Forward. February 2024.
9. 9 UNESCO. Institute for Statistics. International Standard Classification of Education (ISCED). 2021.
10. UNESCO. Transforming technical and vocational education and training for successful and just transitions: UNESCO strategy 2022–2029. 2022.
11. UNESCO & OECD. World Teachers' Day 2020 Teachers: Leading in crisis, reimagining the future. 2020.
12. UNESCO & OECD. World Teachers' Day 2020.
13. UNESCO & OECD. World Teachers' Day 2020.
14. UNESCO. Global education monitoring report 2020: gender report, A new generation: 25 years of efforts for gender equality in education. 2020.
15. UNESCO. Gross Enrollment Ratio.
16. UNESCO. Global education monitoring report 2020.
17. UNESCO International Institute for Higher Education in Latin America and the Caribbean. Women in higher education: has the female advantage put an end to gender inequalities? 2021. https://unesdoc.unesco.org/ark:/48223/pf0000377182
18. The World Bank. Data. Population, female (percent of total population); school enrollment, secondary, (percent gross).
19. UNESCO Institute for Statistics (UIS). 2023.
20. UNESCO. Global education monitoring report 2020.
21. UNESCO Institute for Statistics (UIS). 2023.
22. UNESCO. Cracking the Code. 2017.
23. UNESCO. Global education monitoring report 2020.

24. UNESCO. Science Report: The race against time for smarter development. 2021.

25. Kanjilal-Bhaduri, Sanghamitra, and Pastore, Francesco. IZA Institute of Labor Economics. Returns to Education and Female. Participation Nexus: Evidence from India. 2017.

26. Cameron, Lisa., Dowling, Malcolm., and Worswick, Christopher. Economic Development and Cultural Change. Education and Labor Market Participation of Women in Asia: Evidence from Five Countries. 2001.

27. Organisation for Economic Cooperation and Development (OECD). Education at a glance 2020: OECD Indicators. 2020.

28. Benson, Alan. Li, Danielle. Shue, Kelly. SSRN. "Potential" and the Gender Promotion Gap. June 22, 2022.

29. OECD. What are the gender differences and the labour market outcomes across the different fields of study? October 2017.

30. Doris Weichselbaumer, Dor, Winter-Ebmer, Rudolf, 2005 "A Meta-Analysis of the International Gender Wage Gap" Journal of Economic Surveys, 22 June 2005.

31. Hanson et al. The Burning Glass Institute. Talent Disrupted: College Graduates, Underemployment, and the Way Forward. February 2024.

32. Meyer, Katherine, Bird, Kelli, and Castleman, Benjamin. Brown University. Stacking the Deck for Employment Success: Labor Market Returns to Stackable Credentials. January 2022.

33. Rodriguez, Eugenia, Islam, Asif, and Amin, Mohammad. World Bank Blogs. Understanding Gender Gaps in the Informal Sector. December 2023.

34. Hasnain, Zahid, Baig, Faisal, Mukhtarova, Turkan, and Pela, Kevwe. World Bank Blogs. What We've Been Reading About Public Sector Employment and Wages. October 20, 2021.

35. Mukhtarova, T, Baig, F, and Hasnain, B, 2021 "Five facts on gender equity in the public sector," September 27, 2021. https://blogs.worldbank.org/en/governance/five-facts-gender-equity-public-sector

36. Ferrant, Galle, Pesando, Luca, and Nowacka, Keiko. OECD. Unpaid Care Work: The missing link in the analysis of gender gaps in labor outcomes. December 2014.

37. UNESCO. Global education monitoring report 2023: A Tool on Whose Terms? 2023.

38. Benson, Alan. Li, Danielle. Shue, Kelly. SSRN. "Potential" and the Gender Promotion Gap. June 22, 2022.

39. OECD. What are the gender differences and the labour market outcomes across the different fields of study? October 2017.

40. Welding, Lyss. BestColleges. Students' Top Factors in College Choice and Admissions: 2023. 2023.

41. Mann, Anthony, and Dawkins, James. CfBT Education Trust. Employer engagement in education. 2014.

42. McKinsey & Company. Diversity Matters Even More: The Case for Holistic Impact. December 5, 2023.

43. UNESCO. Women's Access to and Participation in Technological Developments. https://www.unesco.org/en/artificial-intelligence/gender-equality

44. Mann, Anthony, and Dawkins, James. CfBT Education Trust. Employer engagement in education. 2014.

45. ILO. Investing in Career Guidance. The Case for Workers. June 29, 2023.

46. UN Women. The impact of marriage and children on labor market participation. 2020.

47. Leibbrandt, Andreas, and List, John A. Management Science. Do Women Avoid Salary Negotiations? Evidence from a Large-Scale Natural Field Experiment. 2014.

48. NBER. Do Women Avoid Salary Negotiations? April 2013.

49. Gassier, Marine, Rouanet, Léa, and Traore, Lacina. World Bank. Addressing Gender-Based Segregation through Information Evidence from a Randomized Experiment in the Republic of Congo. February 2022.

50. UNESCO. TEVET Policy Review: Malawi. 2019

51. McNally, Sandra. IZA Institute of Labor Economics. Gender Differences in Tertiary Education: What Explains STEM Participation? October 2020.

52. Anjum, Sadia. Future Business Journal. Impact of internship programs on professional and personal development of business students: a case study from Pakistan. 2020.

53. UNESCO & Equal Kills Coalition. I'd Blush If I Could: Closing Gender Divides in Digital Skills Through Education. 2019.

54. Welding, Lyss. Best Colleges. Students' Top Factors in College Choice and Admissions: 2023. November 3, 2023.

55. Silva et al. Studies in Higher Education. The million-dollar question: can internships boost employment? 2016.

56. Baert et al. Economics of Education Review. Student internships and employment opportunities after graduation: a field experiment. August 2021.

57. Cerulli-Harms, Annette. IZA Institute of Labor Economics. Generation Internship: the impact of internships on early labor market performance. December 2017.

58. Beijing Declaration and Platform for Action. September 1995.

59. Choe, Chung, Bin Kim, Yoo, and Choi, Koangsung. The Singapore Economic Review. Do Internships Matter? The Impact of Internship Participation on Employability. March 21, 2023.

60. The World Bank. New Data Show Massive, Wider-than-Expected Global Gender Gap. March 4, 2024.

61. Education and Employers. It's who you meet: Why employer contacts at school make a difference to the employment prospects of young adults. 2012.

62. Education and Employers. The case for employer engagement in state schools. April 2019. ttps://www.educationandemployers.org/wp-content/uploads/2019/04/Research-summary-website-version.pdf

63. Vanderlelie, Jessica. Engaging alumni for employability. 2019

64. Mann, Anthony, and Dawkins, James. CfBT Education Trust. Employer engagement in education. 2014.

65. International Finance Corporation (IFC). Coursera. Women and Online Learning in Emerging Markets. 2022.

66. National Center for Women & Information Technology. Aspirations in Computing website.

67. ILO. Women in Business and Management: The business case for change. 2019.

68. UNESCO. Artificial Intelligence. Women's Access to and Participation in Technological Developments.

69. Harvey Mudd College News. Harvey Mudd's Computer Science Program Now a Harvard Kennedy Case Study. August 20,2021.

70. UN Women. What is Gender Responsive Budgeting? November 13, 2023.

71. ILO. ILO Participatory Gender Audit.

72. OECD. Gender pay gap reporting and equal pay audits. 2023.

73. ILO. A manual for gender audit facilitators: The ILO participatory gender audit methodology (2nd Edition). 2012.

74. United Nations Development Programme. A Guide for Gender-Responsive Companies and Institutions. 2020.

75. The World Bank. The Business Case for Investing in Women's Employment in Lebanon: Malia Group - Fostering productivity and well-being through family-friendly policies. 2022.

76. IFC. Investing in Childcare: A Game Changer for Business and the Nigerian Economy. May 29, 2023.

77. Austin-Egole, Ifeyinwa, Iheriohanma, E.B.J., and Chinedu, Nwokorie. Flexible Working Arrangements and Organizational Performance: An Overview. 2020.

78. Ibarra, Hermini, Gillard, Julia, and Chamorro-Premuzic, Tomas. Why WFH Isn't Necessarily Good for Women. 2020.

79. L'Oreal for USA. Women in Science webpage: https://www.loreal.com/en/usa/pages/group/fwis/

80. UNESCO. Building better formal TVET systems: principles and practice in LMICs. 2023.

81. Gaucher, Danielle. Friesen, Justin. American Psychological Association. Evidence That Gendered Wording in Job Advertisements Exists and Sustains Gender Inequality. March 7, 2011.

82. Beaman, Lori, Duflo, Esther, Pande, Rohini, and Topalova, Petia. Female Leadership Raises Aspirations and Educational Attainment for Girls: A Policy Experiment in India. 2012.

83. Dack, Hillary. Kinkopf, Dara. Research in Middle Level Education. Teachers' Perceptions of Increasing STEM Self-Efficacy Among Female Middle Grades Students. April 10, 2023.

84. U.S. Department of Labor. Women's Bureau. Women in Apprenticeship and Nontraditional Occupations (WANTO). https://www.dol.gov/agencies/wb/grants/wanto

85. ILO. World Social Protection Report 2020-22. 2021.

86. Vanleenhove, Pieter. ECONSTOR. Full childcare coverage: Higher maternal labor supply and childcare usage? 2013.

87. Resource guide on Gender issues in employment and labor market policies. 2014.

88. International Monetary Fund (IMF). Women, Work, and the Economy: Macroeconomic Gains from Gender Equity. 2013.

89. Dabla-Norris, Era, and Kochhar, Kalpana. IMF. Closing the Gender Gap. March 2019.

90. Avram, Silvia. Harkness, Susan. Popova, Daria. ISER Working Paper Series. Gender Differences in Job Mobility and Pay Progression in the UK. February 2023.

91. UNESCO. 2024-2025 Concept Note for the Global Education Monitoring Report. https://www.unesco.org/gem-report/en/leadership.

92. OECD. Joining Forces for Gender Equality: What is Holding us Back? May 9, 2023.

93. UNESCO. UNEVOC. TVETipedia Glossary. Employability.

94. UNESCO. UNEVOC. TVETipedia Glossary. Employment.

95. Malta et al. IMF. Informality and Gender Gaps Going Hand in Hand. May 2019.

96. UNESCO. UNEVOC. TVETipedia Glossary. Gender Gap.

97. Alhassan. Gender Mainstreaming in Basic Education in the Northern Region of Ghana. Legon Journal of Sociology. June 2011.

98. UNESCO. UNEVOC. TVETipedia Glossary. Gender Mainstreamsing in Training.

99. UNESCO. Gross Enrollment Ratio.

100. UNESCO. UNEVOC. TVETipedia Glossary. Graduate Tracer Studies.

101. UNESCO. UNEVOC. TVETipedia Glossary. Labor Force Participation.

102. UNESCO. Institute for Statistics. International Standard Classification of Education (ISCED). 2021.

103. UNESCO. UNEVOC. TVETipedia Glossary. Reskilling.

104. UNESCO. UNEVOC. TVETipedia Glossary. Tertiary Education Institutions.

105. 105 UNESCO. UNEVOC. TVETipedia Glossary. TVET.

106. UNESCO. UNEVOC. TVETipedia Glossary. Unemployment.

107. UNESCO. UNEVOC. TVETipedia Glossary. Upskilling.

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