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**Access and participation of women and girls to education, training,
science and technology, including for the promotion of women's equal
access to full employment and decent work**

**Economic Returns to Education and the Link between Education and
Employment – A Gendered Perspective ***

Submitted by

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* The views expressed in this paper are those of the author and do not necessarily represent those of the United Nations.

The social and economic benefits of educating girls, especially in developing countries, are now well-known. Women's education is associated with: lower infant mortality, increased probability of child survival, reduced fertility, better child health, increased farming and household productivity, better child schooling outcomes, increased labour force participation, higher earnings, greater political participation and increased empowerment. At the heart of the transformation in women's *economic* status is the transformation in their educational attainment. In most developed countries gender parity has been achieved in schooling attainment. In the United States, for instance, women have surpassed men in terms of completing secondary and post-secondary education and the gender gap in schooling stands almost completely reversed. In these advanced economies, women's participation in paid work is also at unprecedented levels and they are increasingly entering occupations previously considered the 'male' domain. Consequently, women's earnings are making an increasingly important contribution to household income hence changing the dynamic of family-life and their economic and social positions (Gregory, 2009).

Despite impressive strides, however, this transformation is far from complete. Not only do women face a relatively narrow spectrum of occupational choices, they also continue to be paid substantially less than men. This inequality of labour market outcomes points to enduring biases and is more glaringly obvious in developing countries. While they have better job opportunities and earnings than ever before, a large percentage of women feature disproportionately among the non-labour force participants. When in the labour force, they are often found trapped in a narrow band of unpaid or low-paid work and insecure occupations¹. Young women in developing countries also have more protracted school-to-work transitions than young men, having access to fewer job search mechanisms and poorer information to smooth their transitions.

The pattern of returns to schooling for men and women and implications for policy

One can jump to the conclusion that gender differences in schooling attainment and economic outcomes are the consequence of prevalent household and labour market discrimination. However, it is useful to know how the *rewards* to men and women's schooling differ in the labour market as these can guide a better understanding of why these differences prevail.

The extent to which an additional year of schooling raises earnings is defined as the private return to education.² This is measured as the slope of the 'education-earnings' relationship in economic analyses. Returns to education are a useful measure of the 'productivity' of the investment in schooling as they measure the proportional increment in earnings with each additional year of schooling completed by an individual. Even more importantly, they are an indicator of the 'incentive' a person (indeed often the parent/s) has to invest in schooling. While measures of returns to an 'additional year of schooling' are useful, such estimates assume that the return to education is identical across each 'level' of education completed. Alternatively, returns can be measured at different 'levels' of schooling completed

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¹ The Millennium Development Goals Report 2008, available at: <http://mdgs.un.org/unsd/mdg/Resources/Static/Products/Progress2008>

² As different from a 'social' return which would capture the full social value of human capital by measuring nonmarket benefits and possible externalities.

such as primary (1-5 years), middle (6-8 years), secondary (9-10 years) and so on.³ These estimates can be especially useful in providing policy insights. The evidence on returns to schooling in recent years consistently reveals them to be convex, i.e. they increase at higher levels of education. In other words, the education-earnings profile becomes progressively steeper at higher levels of education (Colclough, Kingdon and Patrinos 2009).

The evidence

Within the human capital framework, there is no *a priori* reason why returns to schooling should vary for men and women in equilibrium. However, empirical evidence consistently reveals otherwise. Estimates from both developed and developing countries time and again demonstrate the returns to women's schooling to be *higher* than men's. Dougherty (2005) cites 27 studies in the United States of which 18 report higher returns to women's schooling. This evidence is also corroborated in meta-studies from Europe – Trostel, Walker and Wooley (2002) find 24 out of the 28 studies cited to report higher returns to women's schooling. Research from developing countries substantiates these findings – Psacharopoulos and Patrinos (2004) show that of the 95 estimates of returns by gender (based on 49 countries), 63 estimates show a higher return to women's schooling, 23 show a higher return to men's schooling and for 3 estimates the returns are equal by gender.

Estimates of private and social returns to different *levels* of schooling have also been measured for a number of countries. Broadly speaking, the evidence suggests the following: in developed countries, returns to partial and completed college are often higher for females than males while the evidence for high school suggests otherwise and evidence on postgraduate schooling is mixed (Dougherty 2005). Taken as a whole, the return to primary schooling is often found to be lower for women than for men in developing countries while returns to women's schooling increase at secondary levels and the situation reverses again at university education where men's returns are higher than women's (Patrinos, 2008).⁴ However, recent studies from countries such as India and Pakistan find that returns to women's schooling are consistently higher than men's at *all* education levels and because the pattern of returns is convex (i.e. increasing with higher education levels), the *gap* in returns to education also increases at higher education levels (Aslam, Kingdon and Soderbom, 2008 and Riboud, Savchenko and Tan 2007).⁵ Why this is important is because as the education level increases, the slope of the earnings-schooling relationship becomes progressively steeper for both men and women – since the shape is convex for both. Nevertheless, it becomes steeper for women at a *faster* rate than it does for men. That is to say that the gap in earnings falls since the gap in returns to education becomes bigger with education level. The important question is why does the *returns gender gap* become bigger at higher levels of education?

³ Measured crudely as the number of years it is expected to complete a level without considering class repetition or school quality in the estimates.

⁴ Riboud, Savchenko and Tan (2007) note that within South Asia this finding is consistent in recent evidence from Sri Lanka and Bangladesh and not for India and Pakistan where returns to female schooling are higher at all education levels compared to males. Aslam (2009a) also notes the higher returns for women at all education levels in Pakistan.

⁵ Not only that, the returns to literacy and numeracy skills which measure the quality of schooling or learning itself are often also higher for women than men.

Why do returns to schooling differ by gender?

Several explanations have been proposed for this empirical phenomenon but the most plausible include the following:

1. There is a scarcity of supply of educated women in relation to the demand for educated women, and this demand-supply gap probably increases at higher levels of education (as fewer women go on to complete higher education at least in developing countries). Thus women may be paid a scarcity-premium (in terms of higher pay) to enter occupations that require more education. For example, in certain well-paying occupations, there is demand for women workers (e.g. female teachers in government schools; female doctors etc.) or some jobs may be reserved for women due to gender-equity promoting policies that deliberately reserve a certain proportion of jobs for women. If uneducated or low-educated women work in very low paid occupations (compared to uneducated men) – e.g. because of compensating differential type of reasons (see point 2 below), and if educated men and women have roughly equal pay, then the salary-premium for each extra year of education is going to be higher for women than men simply because women are starting from a lower base of pay at zero years of education.
2. Women may work in very flexible arrangements – that are compatible with say childcare or other household duties – such as piece rate work based in their own home. Thus, there is selection into certain types of (more flexible) occupations, which in fact pay less. This is the compensating differentials argument, i.e. that women who work in such occupations may have low pay but they have the compensation that they have flexible working hours.
3. Selection reasons – highly educated women are likely to have also had better quality education, or be more able or motivated compared to women who are not as educated. Thus, the more able and motivated women would be able to attain higher education levels and hence accrue higher returns to their schooling. In fact, the evidence on returns suggests that in countries where women’s access to higher levels of education is still more difficult than men’s and where labour force participation by women is relatively low, women who do overcome these constraints do relatively well in the labour market (Aslam et. al., 2008). Part of the observed higher returns to women’s schooling may hence reflect the greater motivation or ability of these women.
4. There may be an inverse relationship between years of schooling and labour market differences in ‘discrimination, taste and circumstances’. Thus, at higher levels of education, a woman may be more able to resist discrimination, enter more rewarding occupations, or even be more capable of paying for childcare etc. – all factors that allow her to earn a wage that rewards her characteristics more in the labour market (Dougherty 2005). Evidence from the United States confirms this explanation for higher returns to schooling at higher levels of education (Dougherty 2005). Evidence from some developing countries also shows that while a large part of the earnings difference between men and women may be due to ‘discrimination, taste and circumstances’, education helps reduce that differential – there may be less gender-based discrimination among the more educated in labour markets (Aslam, 2009a and Aslam et. al., 2008).

Implications of gender-differences in returns to schooling and policy pointers

Low returns to primary schooling for women in some countries still a cause for concern

Lower returns to women's primary education in some developing countries are a cause for concern as they arrest the achievement of Millennium Development Goal 2 and Goal 3 (MDG2 and MDG3) – universal primary schooling and gender equality. If parents perceive primary schooling to be less beneficial for girls as the returns are low, they may have a reduced incentive to send girls to school. However, primary schooling is a key input to subsequent education cycles as well as a crucial means of gaining numeracy and literacy skills which bring not only economic and social returns, but provide the fundamental basis for achieving agency in a modern society (Colclough, Kingdon and Patrinos 2009). More focused policies such as female enrolment-contingent cash transfers may be needed at the primary level in countries where returns are particularly low.

Improve the quality of schooling available

Good quality education is a key pathway for increasing gender equality especially in labour market outcomes. Low returns to primary schooling may signal poor primary schooling quality such that completing primary schooling does not lead to the acquisition of secure numeracy and literacy skills. This could be a result of declining per student resources as primary school enrolments have risen over time, with consequent reductions in the cognitive skills of the average primary graduate. If this is so (rather than changes in returns deriving from changes in employment patterns), the demand for primary education, as a terminal stage of schooling, is likely to be concomitantly reduced. It is more worrying if the quality of schooling accessed by girls is poorer than by boys. Policy, therefore, needs to focus on the improvement of school quality to strengthen learning especially for girls, and to ensure that the demand for primary schooling is maintained.

Reform curricula to reduce underrepresentation of girls in 'male' subjects

'Occupational segregation' is one explanation for the large observed differences in returns to schooling among men and women. This segregation in the labour market often has roots in gender stereotyping within classrooms and in textbooks and curricula. The persistence of biases is obvious from the underrepresentation of girls studying science subjects even in the more advanced economies. There is a clear need for curriculum reform to reduce the prevalent segregation of traditional 'male' and 'female' subjects that then manifest into accepted 'male' and 'female' jobs. Because teachers are key role models for students, teacher training policy needs to be modulated as well to ensure teachers are able to overcome gender-stereotyping in teaching. Colclough (2008) argues that hiring more female teachers should be a leading component of a gendered strategy. Not only does the presence of female teachers increase girls' enrolments but examples from initiatives in a number of sub-Saharan African countries, such as the Forum for African Women Educationalists (FAWE), show how women teachers can be at the forefront of gender sensitization and awareness and in encouraging the teaching of science, maths and technology, and training in gender-responsive methodologies.

Increase women's access to higher education levels

Some recent studies in developing countries have found education to have a strong potential to increase gender equality in the labour market *beyond* primary levels. Access to higher levels of

education allows women to reduce gender gaps in earnings. However, a majority of women in developing countries never make it beyond primary schooling (if that). To strengthen the labour market equality-promoting benefits of education, these countries will need to ensure that a greater proportion of women have an incentive to proceed to secondary education and beyond. Attention to increasing the supply of secondary and tertiary education and to easing credit constraints for girls, e.g. by providing attendance-contingent cash transfers for girls, may be required. Income support schemes that provide enrolment-contingent cash transfers to poor families have been successful in Latin America while school-meal programmes have had some success in increasing girls' enrolments in South Asia. Scholarships and bursaries have been shown to have much success in ensuring girls' enrolments at higher (secondary) education levels and beyond in Bangladesh, Zambia, Zimbabwe and elsewhere in Africa (Colclough 2008).

Re-examination of social policies needed

The fact that returns to education are often substantially larger for women than men presents the cheering scenario that education can be a path to gender equality in the labour market. It also suggests that there are often strong economic incentives for investment in girls' schooling, which ought to lead to gender equality in education or, if anything, to *pro-female* gender gaps in education, rather than what we actually observe—large pro-male gaps. This raises a puzzle as to why women have low levels of education when the economic incentives for educating them are so much stronger than for educating men.

One potential explanation is that parents may allocate less education to daughters than sons, even if the labour market rewards women's education more, since the returns *accruing to parents* from a daughter's education are lower than those from a son's education. Absence of social security systems for old-age support, coupled with the social norm that girls live with their in-laws, imply that any economic benefits of education investments in daughters are reaped by their in-laws, while economic benefits of education investments in sons are reaped by parents in the form of old-age support. Thus, economic necessity may prompt greater investments in boys' education, despite higher labour market returns to women. A re-examination of social policy is needed which subsidizes girls' schooling until the time that family investment in schooling becomes relatively equal for boys and girls. If parents are partly under-investing in girls' schooling because the lack of pension provisions requires them to depend on sons for old-age support, policies may need to address this institutional failure. If girls are getting less schooling because the opportunity cost of school time in terms of home production is too high, more innovative policies, such as night school and income subsidies/monetary incentives may be needed to increase girls' enrolments.

Policies needed to counter rampant discrimination and 'occupational segregation' still faced by women in labour markets

An alternative explanation for the puzzle of high returns coupled with low schooling is that while the economic return to schooling is considerably higher for women than men, *total earnings* are dramatically higher for men than women in several countries. This reflects large elements of gender discrimination in the labour markets which prevent women from realising the high returns to their educational investments. In developed countries there is now a broad-based legal framework in the form of legislation to outlaw sex-based discrimination, although the impact of this legislation has been fairly limited (Connolly and Gregory 2008). In some developing

countries no such framework exists. There is, therefore, a clear need for reforming labour market policies in ways that reduce gender-differentiated treatment by employers and reduce the occupational segregation of women that relegates them to low-paid occupations.

Active labour market and education policies are needed to match the supply and demand of women workers

The ‘higher returns’ story for women is still possibly a ‘scarcity premium’ story – there are simply not enough highly educated women who are needed in crucial jobs in the labour market. Hence there is a divergence in the supply and demand for skilled women with the supply lagging behind demand. In many countries, especially in South Asia, despite sizeable investments in education by Governments, the returns to education at higher levels (secondary and tertiary) have remained large especially for women, indicating that education and labour market policies and programmes have not yet fully responded to the high and rising demand for skills (Riboud et. al. 2007). Active education policies are needed to increase the supply of skilled women. As mentioned before, policies may need to range from those targeting institutional failure to those aimed at improving the quality of schooling and type and quality of vocational schooling available to girls/women. In some countries targeted policy may be needed to increase the supply of secondary and tertiary schooling for women and ease credit constraints to ensure girls stay in school longer. Finally, countries may need to reform labour market policies in ways that reduce discrimination against women to ensure the ‘total’ return to women’s schooling is high enough to create an incentive for them to acquire high levels of schooling.

Policies needed for absorbing a growing number of young educated women into the workforce

Despite the odds faced, an increasing number of women are now getting educated and entering the workforce. While young men’s labour market participation rates have been consistently higher than young women’s, the gender difference in activity rates has diminished enormously in the last 50 years – while the gap was 29.2 percentage points in 1950, it had shrunk to 14.9 percentage points by the year 2000 (ILO, 2004, p. 8). However, it is also well-known that young women’s school-to-work transitions are more protracted and variable compared to young men’s. Young women are also more likely to be unemployed than young men in most developing countries. This creates a new challenge for policy-makers worldwide who need to ensure that this pool of young, educated women is not relegated to the ‘out of the labour force’ category due to discouragement and inability to find opportunities suitable to their qualifications. Some important policy considerations to aid the ‘school-to-work’ transitions of young women are listed below:

- 1) At the heart of this debate is the provision of more schooling and particularly quality basic schooling to girls. There is evidence from South Asia that youth with less schooling (primary and lower secondary) are likely to face a more protracted job search compared to the more educated (Riboud et. al., 2007). There is also evidence that education (and particularly literacy and numeracy skills) attainment has the potential to increase gender equality in the labour market by improving women’s access to more lucrative jobs (Aslam et. al., 2008). In many developing countries, women continue to acquire less schooling than men. Moreover, sometimes even the quality of education acquired by

women is poorer than acquired by men (Aslam 2009b). A woman with the requisite years of schooling but without the basic cognitive skills needed to carry out the tasks required by a job is not 'educated'. This is especially critical in view of international evidence that the propensity of economic success of individuals and of nations rests on what they have learnt rather than on how many years of schooling they have attained (Hanushek and Woessmann, 2008). In this scenario, the evidence that literacy gaps between young men and women are widening in Africa and Asia is a cause for concern. A policy focus on provision of quality learning remains critical to ensure a smooth transition of 'educated' women into working women.

- 2) High unemployment and long job searches among women may be manifestations of poor skills and training. This is because occupational and vocational segregation results in women being encouraged to acquire 'feminine' skills which supposedly come in use in the more 'female' occupations such as food preparation while young men obtain more technology-based training. In the changing global environment, however, there has been a shift in demand patterns oriented towards services where women often have a 'comparative advantage'. While in developed countries there has been recognition of and acceptance of this shift, developing countries are still struggling in their old-fashioned gender-skills divide. Targeted policy is needed that matches young women's job skills and updates their technology skills to meet the needs of globalisation. While basic education provision is critical, vocational schooling and apprenticeship programmes can play a critical role in improving young women's employability and can aid their transitions into the workforce. This requires not only improving the quality of existing vocational training available, but also revamping the training system to ensure equal opportunities for men and women. Linked to the point above, an important policy challenge is to tackle the occupational segregation of women into 'female' occupations.
- 3) 'Family friendly' labour market policies such as the provision of child care facilities are needed in many developing countries not only to smooth the school-to-work transitions of young women but also to facilitate their *re-entry* into labour markets after childbirth.
- 4) In some countries, cultural norms resiliently constrain women's mobility and their entry into labour markets. Educating a girl may be more culturally acceptable, but paid work may be frowned upon. Active policies using media messages to break existing norms and using female role models in campaigns can help overcome cultural resistance to ease young women's transitions into work.
- 5) Allowing young women access to 'private' entrepreneurship is a critical component of their transition into work. Social, financial and cultural factors discourage youth in general and young women in particular in opting for self-employment. Policies that allow young women access to microfinance may help achieve this goal.
- 6) Finally, young persons in most developing countries fail to receive formal guidance on career development and employment prospects. One of the key barriers to young women's employment is their relative lack of social capital that can help them gain access to lucrative employment. Policies aimed at targeted mentoring of young women may help ease their transitions.

A study by Katz (2008) provides an excellent summary of some recent initiatives promoting young women's transitions in developing countries and much of the following discussions draws from her paper. The ProJóven in Peru and the Jóvenes en Acción in Colombia are examples of

exceptionally demand-driven youth employment programmes providing targeted training to young women especially in the traditional ‘male-dominated’ occupations.⁶ ProJóven succeeded in increasing women’s employment rates (compared to men) and reduced occupational segregation. The programme in Colombia succeeded in raising women’s earnings (compared to men and the non-trainees) substantially. While these programmes are examples of how successful well-targeted gender-focused programmes can be in raising women’s labour market participation and easing their school-to-work transitions, they also highlight a number of caveats. Firstly, part of the success of these programmes relied on the existence of a pre-existing infrastructure which may not exist in other developing countries. Secondly, and more importantly, these programmes are what Katz (2008) terms ‘minimalist’ as they concentrate on skills training alone. Employment programmes based on the ‘livelihoods approach’ that simultaneously target other constraints faced by young women during their transitions (such as lack of child care facilities, limited mobility and lack of sexual and reproductive health information) may be more successful in achieving even longer-term success.⁷

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⁶ Details available in Katz (2008).

⁷ The ‘Action for Slum Dwellers’ Reproductive Health, Allahabad’ (ASHRA) project in India and the Tap and Reposition Youth (TRY) in Kenya are examples of these initiatives (see Katz 2008 for further details).