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Social Exclusion and the Gender Gap in Education

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Abstract

Despite a sharp increase in the share of girls who enroll in, attend, and complete various levels of schooling, an educational gender gap remains in some countries. This paper argues that one explanation for this gender gap is the degree of social exclusion within these countries, as indicated by ethno-linguistic heterogeneity, which triggers both economic and psycho-social mechanisms to limit girls' schooling. Ethno-linguistic heterogeneity initially was applied to explaining lagging economic growth, but has emerged in the literature more recently to explain both civil conflict and public goods. This paper is a first application of the concept to explain gender gaps in education. The paper discusses the importance of female education for economic and social development, reviews the evidence regarding gender and ethnic differences in schooling, reviews the theoretical perspectives of various social science disciplines that seek to explain such differences, and tests the relevance of ethnic and linguistic heterogeneity in explaining cross-country differences in school attainment and learning. The study indicates that within-country ethnic and linguistic heterogeneity partly explains both national female primary school completion rates and gender differences in these rates, but only explains average national learning outcomes when national income measures are excluded.

This paper—a product of the Human Development Network Chief Economist's Office—is part of a larger effort in the Network to explore issues in education and excluded groups. Policy Research Working Papers are also posted on the Web at http://econ.worldbank.org. The author may be contacted atmlewis1@worldbank.org.

Social Exclusion and the Gender Gap in Education[1]

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Social Exclusion and the Gender Gap in Education

Despite a sharp increase in the share of girls who enroll in, attend, and complete various levels of schooling, an educational gender gap remains in some countries. In this paper we argue that one explanation for this gender gap is the degree of social exclusion within these countries, as measured by ethno-linguistic heterogeneity, which triggers both economic and psycho-social mechanisms to limit girls' schooling. Ethno-linguistic heterogeneity (or ethno-linguistic fractionalization, ELF) has appeared in the literature as a driver of economic growth, civil conflict, and the availability of public goods (Alesina, Devleeschauwer, Easterly, Kurlat, and Wacziarg. 2003; Habyarimana, Humphreys, Posner and Weinstein, 2007; Matuszeski, and Schneider 2006), but this is a first application of the concept to explain gender gaps in education. The organization of this paper is as follows. Section 1 discusses the effects of female education on economic and social development. Section 2 reviews the evidence regarding gender and ethnic differences in schooling, and introduces the concept of "social exclusion" as it applies to these differences. Section 3 examines the origins of social exclusion and reviews various theories from economics, sociology and psychology regarding how social exclusion can account for gender and ethnic differences in education. Section 4 tests the association empirically through cross-country analyses, and Section 5 presents our conclusions.

1. Girls' Education and Development

The importance of girls' education for economic and social development is well known. Evidence from cross-country studies, household surveys, and anthropological observations provides a sound basis for concluding that educating women provides multiple payoffs for households and societies (World Bank 2001; Herz and Sperling 2004; Lloyd and others 2005). Development economists have emphasized the importance of girls' educational attainment in reaching overall development goals. Summers (1994) noted that "investment in girls' education may well be the highest return investment available in the developing world". Levine, Lloyd, Greene and Grown review the evidence for investing in adolescent girls, in particular (Levine and others 2008).

The positive association between gender equality in educational attainment and GDP levels is well known. For more than a decade, cross-country studies examining the impact of female education on GDP and economic growth consistently have demonstrated positive effects

(Hanushek and Kimko 2000; Klasen 1999; World Bank 2001; Hill and King 1995; Dollar and Gatti 1999). More recently, as enrollments in primary education have become universal, attention has switched from looking at the development effects of school enrollments to the effects arising from completed primary or secondary school or from actual measures of what has been learned in school (Pritchett 1977; Hanushek 2006; Hanusheck and Woessmann 2007). Schooling has a powerful effect on growth; Hanushek and Woessmann estimates that each year of schooling boosts long-run growth by .58 percentage points. But what is learned is more important; countries with test scores that are one standard deviation higher than the average also have a 2 percent higher growth rate in GDP per capita (Hanushek and Woessmann 2007).

Returns to girls' education in developing countries are largely positive and in some cases exceed those observed in developed countries. Educated women are more likely to enter the formal labor market, where earnings exceed those of informal or home-based work (Malhotra, Grown, and Pande 2003). And women with secondary schooling see significant returns (Psacharopoulos and Patrinos 2002; Schultz 1993, 2002; Lloyd and others 2005). In countries with a tradition of dowries or bride prices the perceived value of a potential bride grows with education (Schuler 2006; Behrman and others 1999). Even in the agricultural sector, where most farmers in developing countries are women, education raises productivity, and the returns to women's education exceeds those of men (Lockheed, Jamison, and Lau 1980; Quisumbing 1996). Moreover, improvements in women's farming methods have reduced infant malnutrition (Smith and Haddad 1999).

The social impact of female education is profound. Most prominent is the role of mothers' education in lowering fertility, reducing infant and child mortality, and promoting children's education. Educated girls tend to marry later, and they are more likely to plan their families, improving reproductive health and lowering fertility. On average, infant mortality declines 5–10 percent for each year of girls' education (Schultz 1993). One study in Africa found a 40 percent boost in child survival for mothers with five years of primary education (Summers 1994). Cross-country studies by Klasen (1999) and Hill and King (1995) show similar results.

Hannum and Bachmann's recent review of this literature observes that "countries with higher rates of female schooling and lower child mortality experienced substantial reductions in fertility and desired family size" (Hannum and Bachmann 2006:514). Klasen (1999) and Lloyd, Kaufman, and Hewett (2000) show that surges in education almost always precede the transition

to lower average fertility. Women with secondary education reduce their fertility by two or more children compared with uneducated mothers (Subbarao and Raney 1995; Schultz 1993; Hannum and Bachman 2006).

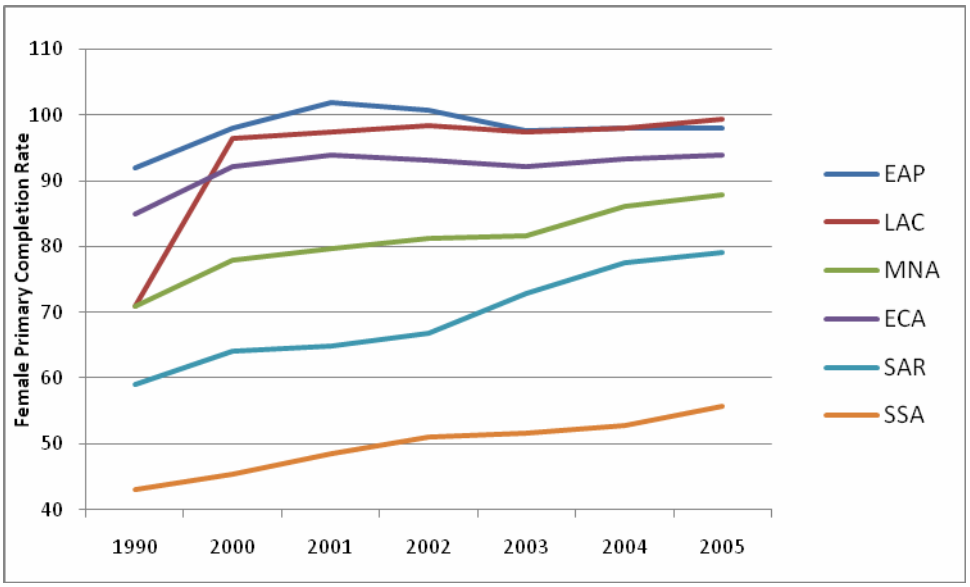
Education also improves women's status within the family, and gives them greater control over family finances. This directly affects children, as women are more likely to spend discretionary resources on investments in human capital—health, education, and food (Thomas 1990; Hoddinott and Haddad 1995; Bruce and Lloyd 1996; Morley and Coady 2003).

Moreover, education empowers women to protect themselves from infection and domestic violence. In Africa, encouraging evidence suggests that education can help halt transmission HIV/AIDS (Herz and Sperling 2004). Educated women are better able to reduce risky behavior by negotiating safe sex with their partners (Malhotra, Grown, and Pande 2003). Studies of domestic violence in Bangladesh and India find that women with some education experience fewer beatings from their spouses (Purna 1999; Jejeebhoy 1998; Bates, Schuler, and Islam 2004; Schuler 2006).

Maternal education shows universally positive impacts on children's schooling. In analyzing Demographic and Health Surveys from 68 countries, the Unesco Institute of Statistics (UIS) found that the level of maternal education was a significant correlate of whether a child attended school in all but 5 countries (UIS 2005). Children of mothers who had ever attended formal schooling were much more likely to attend school than children of mothers who had not been to school (Behrman and Sengupta 2002, Schultz 2002, Alderman and King 1998). Filmer's (2000) study of 14 countries suggests that an additional year of mothers' education raises the likelihood of children's school enrollment by 1–6 percentage points. Mothers' education has a strong effect on girls, particularly where girls' enrollment lags behind that of boys (Behrman and Sengupta 2002; Schultz 2002; Alderman and King 1998; Ridker 1997).). In Lao PDR, children of more educated mothers were more likely to be attending school, and the effect was more pronounced for girls (King and van de Walle 2007). In Pakistan, maternal education was particularly important for daughter's school participation (Lloyd, Mete and Grant 2007). Even in rural China, where school participation at the primary level is near universal, mothers' educational attainment helps predict secondary school enrollment (Hannum and Adams 2007).

Encouragingly, evidence, advocacy and the expansion of mass education worldwide have resulted in near-universal universal enrollments at the primary and lower secondary levels and 88 percent primary completion rates (Baker and Le Tendre 2005; EdStats 2008). Investments in girls' education have increased, and girls have been catching up with boys at a rapid rate. Importantly, female primary school completion rates in developing countries have steadily risen since 1990, reaching near 100 percent in some regions (figure 1). Across all developing countries, the gender gap in primary school completion rates, which stood at 14 percent in 1990, dropped to 9 percent in 2000 and to 4 percent in 2005 (Bruns, Mingat, and Rakotomalala 2003; EdStats 2008). But even in 2000, only 76 percent of girls age 10-14 in developing countries had completed primary school, as compared with 85 percent of boys the same age (Bruns, Mingat, and Rakotomalala 2003). As recently as 2005, in Sub-Saharan Africa the female primary school completion rate was 56 percent and in South Asia it was 79 percent, with gender gaps of about 10 percent in each region (table 1). The remainder of this paper explores why these children are out of school.

Figure 1: Female primary school completion rates, by region, 1990, and 2000-2005



Source: EdStats 2008 (2000-2005); Bruns, Mingat, and Rakotomalala 2003 (1990).

Table 1. Gender differences in primary completion rates, by region, 1990–2000 (percent)

	1990			2005		
	Girls	Boys	Difference	Girls	Boys	Difference
Sub-Saharan Africa	43	57	14	56	66	10
East Asia and the Pacific*	92	97	5	98	98	0
Europe and Central Asia	85	95	10	94	96	2
Latin America / Caribbean	71	64	-7	99	97	-2
Middle East and North Africa	71	84	13	87	93	6
South Asia	59	77	18	79	88	9
All developing countries	65	79	14	84	89	5

Source: Bruns, Mingat, and Rakotomalala 2003.

*Data for 2005 not available. Data are for 2000.

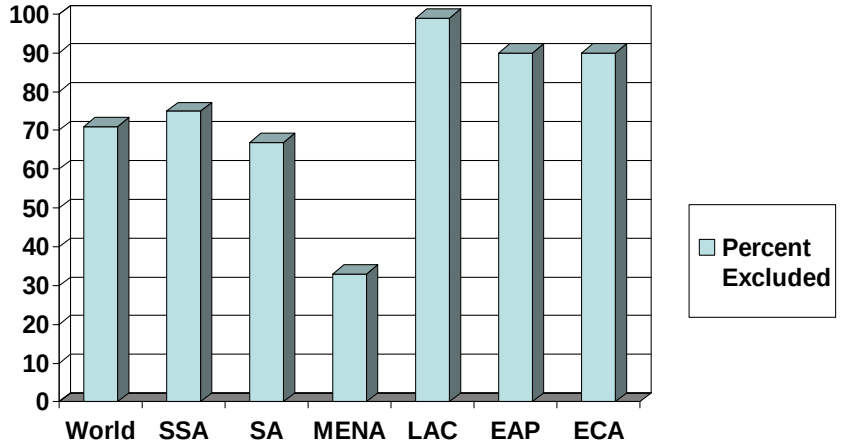
2. Gender and Ethnic Differences in Schooling

UNESCO recently estimated that nearly 78 million primary school-age children remain out of school, and a gap in school enrollment, completion and learning persist between boys and girls, and among various ethnic groups within countries (UNESCO 2007). Many countries in which the education gender gap remains acute are countries where historically women have been marginalized and secluded, such as the countries of South Asia. Marginalization of women within ethnic subgroups is also found in countries where gender parity in education has been achieved for the majority population. Thus, girls who belong to marginalized groups -- such as the hill tribes in Southeast Asia, indigenous and Afro-descendent populations in Latin America, the lowest castes in India and Nepal, the Roma in Eastern Europe, or the Akhdam in Yemen[4] -- suffer disproportionately in education relative to the mainstream populations and to boys in their own linguistic or ethnic group. Lewis and Lockheed (2006) estimate that such girls comprise

[4] More than a million Akhdam, who are set apart by their African features, are concentrated in segregated slums in the major cities of Yemen (Worth 2008).

more than 70 percent of out-of-school girls in the developing world (figure 2). The regions with the highest enrollments – Latin America, Eastern Europe and Central Asia, and East Asia – are also those with the largest proportion of out-of-school girls from excluded groups.

Figure 2: Excluded Girls as Estimated Share of All Girls Out of School, by Region



Source: Lewis and Lockheed 2006

Gender gaps. Gender gaps are found in school enrollments, years of schooling attained and school completion. According to UNESCO, 40 percent of developing countries had not achieved gender parity in primary school enrollment as of 2002 (45 countries out of 113, although in five of these countries, the gender gap favored girls). At the secondary level, girls' enrollment lagged that of boys in 46 developing countries, exceeded that of boys in 29 developing countries, and was at parity in the remaining 38 developing countries for which data were available (UNESCO 2005).

More recent data from UNESCO shows a sharp decline in the absolute number of girls who are not enrolled in school in developing countries, from an estimated 55.4 million in 1999 to an estimated 41.7 million in 2004. The number of boys not enrolled in school also dropped, from 38.6 million to 31.8 million over the same time period. The gender gap – 16.7 million more boys than girls enrolled in school in 1999 – dropped 40 percent, to 9.9 million more boys than girls enrolled in school in 2004 (UNESCO 2006). Much of the reduction occurred in South and West Asia, where the number of unenrolled children was halved, largely due to reductions observed in

India. Enrollment, however, does not ensure completion, and the large gender gaps in primary school completion rates signal serious issues.

Ethnic and linguistic gaps. In general, "marginalized" ethnic-linguistic groups are disadvantaged with respect to schooling, often on account of geographical isolation. Thus, in India, children from the lowest caste groups and from tribal groups trail majority children in school enrollment by about 10 percentage points (Census of India 2001). In Ecuador indigenous children are 30 percent more likely to drop out of schools in rural areas than non-indigenous children (Hall and Patrinos 2006). In Bolivia, the primary completion rate of indigenous children, 55 percent, is 25 percentage points lower than that of mainstream children (81 percent). In Laos, PDR, rural young adults have completed about 3 years of schooling, whereas urban young adults have completed about 8 years (King and van de Walle, 2007). In Vietnam restrictions on mobility and inequities in school provision lead to significantly fewer years of education among rural minorities (van de Walle and Gunewardena 2001). In Guatemala rural residence is correlated with delayed primary school entry, lower grade for age, lower rate of primary completion, and lower secondary enrollment (Hallman and Peracca 2007).

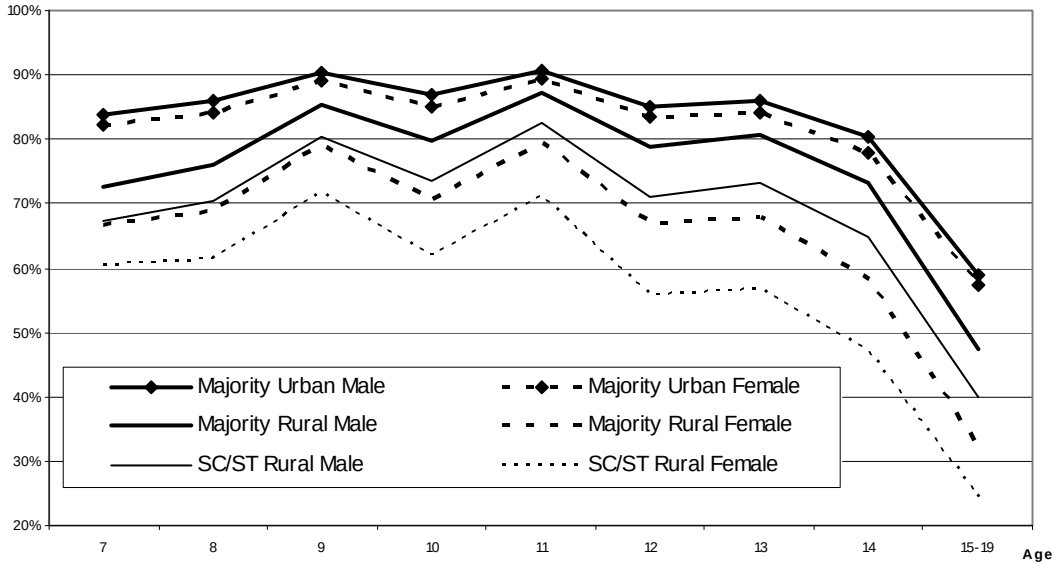
Double disadvantage. In each of the above cases, the girls in the marginalized groups trail not only the mainstream children but also the boys in the marginalized groups. Thus, these girls are "doubly disadvantaged." They are disadvantaged as girls and, in addition they are disadvantaged because they come from impoverished families, tribal, ethnic, or linguistic "minority" communities, geographically remote settings, or lower castes. They are less likely to participate in education and more likely to stay in school only briefly if they enroll at all (Lewis and Lockheed 2006). The exact number of "doubly disadvantaged" girls who are out of school is elusive, since education data are rarely disaggregated by both gender and group identity. Examples from a few countries (see Annex A for details) suggest that gender gaps are significant within ethnic/linguistic groups with respect to:

- having ever enrolled in school in Guatemala, Bolivia, and China (Hallman and Peracca 2007; Jimenez 2004; Hannum 2002);
- current participation in schooling in Guatemala, Ecuador, India and Nigeria (Hallman and Peracca 2007; Garcia Aracil and Winkler 2004; Census of India 2001; Unesco Institute of Statistics 2006);

- number of years or level of schooling completed in Bolivia, Ecuador, Guatemala, Laos PDR, Mexico, Peru (Jimenez 2004; Garcia Aracil and Winkler 2004; Hallman and Peracca 2007; King and van de Walle 2007; Ramirez 2006; Trivelli 2006); and
- achievement as measured by tests in Ecuador, India, Laos PDR, Peru, South Africa (Garcia Aracil and Winkler 2004; Wu and others 2007; Postlethwaite personal communication 2006; Cueto and Secada 2004; Lewis and Lockheed 2006).

Figure 3 shows the distribution of school enrollment by gender, location and caste for India based on the 2001 census. The highest caste girls and boys are about even in years of schooling, followed by rural males from the majority population. The lowest school attainment is among rural girls from scheduled castes/scheduled tribes followed by rural girls from the majority group. Rural boys from both groups are more likely to be enrolled across all age groups when compared to girls. It is only the urban girls from the majority population that outpaces any boy.

Figure 3: India: School Enrolment by Gender, Location and Caste, 2001



Source: Census of India 2001 (http://www.censusindia.net/results/C Series)

In some cases, historical inequities found in adult populations are not found for current school-age populations, as in Ghana and Malawi (Lewis and Lockheed 2006), suggesting that change does occur across ethnic and geographic groups over time.

3. Perspectives on Social Exclusion

Why do certain social groups become marginalized, or, in the words of Meerman (2005) "socially excluded"? And what are the mechanisms that relate social exclusion to children's school participation? This section reviews some socio-economic perspectives.

Origins of social exclusion. In recent years, the term "socially excluded" has been used to describe the groups that appear lower status and marginalized. Meerman (2005) describes the historical preconditions for social exclusion. He observes that such marginalization arises from:

- Stigmatization by recent historical trauma at the hands of the majority population (for example, a history of slavery or dispossession of a homeland).
- Ethnic differences, including differences in ethnic group, language, and religion.
- Low status, such as caste, as excluded groups are "ranked" or subordinated in the social hierarchy below the majority population.
- Involuntary minority status (in contrast to immigrant groups that are voluntary minorities)

What distinguishes social exclusion from simple separatism are the invidious social evaluations (in terms of differences in honor, respect, esteem, and the like) that are accorded the excluded group by a dominant social group and that may even be shared by the excluded group. These evaluations lead to differences in expectations for a range of behaviors, including those related to education. In many parts of the world, social exclusion reflects a history of colonization or enslavement, as that by European colonists in North and South America, Africa, and Asia that created the excluded groups of Native Americans and blacks in the United States and the Maori in New Zealand, among others.

Ethnic populations or subgroups whose mother tongue is distinct from a national official language often remain outside the mainstream economy and society. Countries as diverse as Guatemala, India, Lao PDR, and Pakistan all have "ranked" linguistic and ethnic subgroups that lag economically and socially behind the majority population (Meerman 2005; Lewis and Lockheed 2006). In some societies poverty has significance that goes beyond simple economic well-being to include disparagement and marginalization of the poor by the wealthy, perpetuating the cycle of poverty due to limited economic and social mobility. Subsistence agriculture and geographic isolation effectively separate certain groups from the mainstream society, but as

development occurs, these communities inevitably come in contact with the larger society, which affords them less respect than the majority population. Traditional status hierarchies, such as caste rankings in India and Nepal, lead to exclusion of those lower in the hierarchy by those higher in the hierarchy. Loury (2000) defines the socially excluded as those who receive inadequate support from public institutions and whose opportunities remain constrained due to structural and cultural factors that serve to exclude them.

Explanations for the education gender-gap within marginalized groups can be found in the economics and social psychology literature, which discuss the consequences of being marginalized, discriminated against and subject to lower expectations. Economic theories tend to stress supply, demand and discrimination constraints, while social-psychological theories tend to focus more on expectations and subtle constraints observed in interpersonal interaction.

Economic perspectives. Marginalization leads to both an inadequate and substandard public supply of schools and lower demand for education, often related to its costs and perceived (lack of) benefits. Overt discrimination by the majority against the minority may explain these constraints.

The quality of public programs directed at marginalized groups, even mainstream services such as education, tend to be inferior as compared to those aimed at majority populations (Alessina and others, 2003; Habyarimana and others 2007). Studies of schools serving rural communities, for example, have found them to be of poorer quality (schools with leaking roofs, no electricity and fewer classrooms than grades) than those serving urban communities in Egypt, Pakistan, Chile, India, Vietnam, Laos (Lloyd, Mensch and Clark 2000; Lloyd and others 2003; Lloyd, Mete and Grant 2007; King and van de Walle 2007; van de Walle and Gunewardena 2001; Lloyd ; World Bank 1997) Because marginalized groups remain outside the mainstream their members often do not participate in civic activities and have little if any knowledge about education; public leaders are not responsive to their needs And, although poor quality schools affect both girls and boys, girls' school participation seems to be more sensitive to variations in the quality of schooling.

Children of marginalized groups suffer not only from poor quality schools, but also from discriminatory treatment when they reach schools. Their parents also have little say over the content of the curriculum (to ensure local relevance or provide input on the language of instruction), teaching methods or the selection or oversight of teachers. In some cases, parents

specifically identify discrimination at school and mistreatment by teachers as reasons for keeping children out of school (Ringold, Orenstein and Wilkens 2003; Narayan 2000). All this leads to lower school participation and to less learning. For example, a cross-national study estimated that the combined effects of gender and marginalization (immigrant status and isolated residence) lowered mathematics scores a staggering 35 points, equivalent to one-third of the difference between the highest scoring country and the international average (Woessman 2000).

The high costs of schooling as well as its low returns reduce demand. For poor parents in particular, the opportunity, social and direct costs of schooling are high. In addition, weak employment opportunities, and perceptions about the low returns in the labor market to those who have attended school, create weak demand. While the poor quality schooling and discrimination mentioned above are important, cost appears to be paramount.

The direct costs of primary school, in the form of school fees, family contributions and unofficial fees, can represent a significant portion of a families' disposable income, preventing even families who wish to send children to school from enrolling them (Bray 1998, Kattan and Burnett 2004). Other direct costs of education (school uniforms, textbooks, transportation) can be additional barriers. For marginalized groups, who typically have both low incomes and limited demand for schooling, these costs prove insurmountable. Costs associated with sending girls to school can be even higher, as, for example, when lack of transportation to school can mean long, possibly unsafe walks, particularly for adolescents. In Central Asia, for example, costs of schooling increased substantially during the transition following the dissolution of the USSR, leading to increasing gender disparities in enrollment (Silova and Magno 2004).

Families may have a preference for paying costs associated with schooling boys, as the returns would be higher given labor market opportunities, and, socially, girls in many societies are "married away" joining the husband's family and no longer providing for or living with her family. The general male preference often found among excluded groups adds to the disadvantage experienced by girls. Opportunity costs are also high for marginalized families and Basu and Tzannatos (2003) find that the need for child labor is the single most important reasons for poor families not sending children to school in developing countries.

Labor market returns are often poorer for minority groups and women, particularly minority women, due to labor market discrimination and possible differences in language and other skills.

Studies in Brazil (Mario and Woolcock 2007;) Eastern Europe (Ringold, Orenstein and Wilkens 2003), India (Narayan 2000), Laos (King and van der Walle 2007), Peru (Nopo, Saavedra and Torero 2004), South Africa (Mwabu and Schultz 2003), and Vietnam (van der Walle and Gunewardena 2001), demonstrate the significant gap in average incomes between dominant groups and marginalized groups. For example, in Latin America, workers from indigenous and racial sub-groups earn less than white non-indigenous workers with the same educational attainment. Earnings of females from marginalized groups lag considerably behind those of males in their community particularly in countries with the largest indigenous or racial sub-groups (Bolivia, Brazil, Guatemala, Guyana, Peru) (Hall and Patrinos 2006).

Social-Psychological perspectives. Two main lines of thinking are relevant to the education gender gap within marginalized groups, particularly as it affects achievement on tests. One explanation, relevant to individual performance, focuses on how a testing situation can "activate" gender or ethnic stereotypes, to the detriment of those who feel threatened by the stereotype. Activation of the stereotype creates higher levels of anxiety among the test takers, distracting them from the task and lowering their performance. Research on such "stereotype threats" has been carried out in dozens of laboratory experiments with respect to black/white, gender, social class and white/Asian differences in test performance (Steele & Aronson 1995). In all cases, performance declined when stereotypes were activated. For example, the math performance of high achieving white male students declined when they were told that Asian students usually outperformed whites (Aronson et al 1999). The test performance of high achieving black students was poorer when they were told the test was a test of ability than when they were told it was just a test about problem solving (Steele and Aronson 1995).

An example of stereotype threat in a developing country comes from an experiment carried out in India by Hoff and Pandey (2004). Low-caste junior high school boys performed equally well as high-caste junior high school boys at a task when the boys were strangers and had no information about each other, including about their caste. When caste was announced, however, the performance of low-caste boys dropped, while that of high caste boys improved. And the difference became greater when the boys believed success in performance depended upon subjective judgments being made by the researchers. Research shows, however, that discrimination based on stereotyped beliefs about abilities can be reduced by counter-stereotypical information (Aguero 2005).

A second explanation for poor performance, relevant to team work and classroom interaction, can be found in literature regarding expectations and social interaction (Berger, Fisk, Norman and Zelditch 1977; Webster and Hysom 1998; Ridgeway 1997). Marginalized groups have both lower social status and are subject to generalized, diffuse expectations about their competencies and abilities; these expectations affect social interaction and cannot easily be reduced (Ridgeway 1997). Sociologists distinguish between such status-based beliefs and simple discrimination or group identity effects "by the fact that those in the disadvantaged group overcome in-group bias and concede that the other group is more socially worthy" (Ridgeway and others 1998, p338). For example, in Yemen "most of the Akhdam have internalized their low status and do not try to better themselves, find real jobs or seek an education" (Worth, 2008). Marginalized children, particularly girls, suffer from these expectations.

Expectations lead to differences in opportunities for interaction in school classrooms, and hence affect children's opportunity to learn in two ways. First, marginalized children in heterogeneous classrooms talk less. Educators have long recognized that learning is enhanced through verbal interaction with classroom peers and teachers (Piaget 1926, Rogoff 1990, Vygotzky 1962). Girls, ethnic sub-groups and the poor remain comparatively silent in class, constrained by status-based expectations regarding their own competencies relative to the competencies of others in the class (Cohen 1982). In US classrooms, "low status" students talk less than "high status" students in elementary and middle school classrooms, and black children exercise less influence over group tasks than do white children (Cohen and Lotan 1995; Cohen, Lockheed and Lohman 1972). In Israel, children from North African backgrounds exercise less influence over group tasks than do children from European backgrounds (Sharan and Schachar, 1988).

Second, teachers often hold performance expectations based on student social status. For example, in Brazil, Ligea de Oliveira Barbose (2004) found differences in teacher expectations for the academic performance of 4th grade children on the basis of gender, ethnicity and household wealth in a study of 48 primary schools in Minas Gerais. In this case, teachers' expectations were higher for girls, but lower for colored students and students from poorer households. After taking into account the actual performance of the students, only teacher expectations in favor of girls remained statistically significant. In China, teacher expectations for primary students are strong predictors of whether children subsequently enroll in secondary school, but mother's aspirations and teachers' expectations were equally important in explaining children's aspirations for their own schooling (Hannum and Adams 2007).

Other correlates of exclusion. The socially excluded also suffer on account of geographical isolation, weak home support for schooling due to past inequities that limited educational opportunities for parents, cultural factors, and – above all – poverty.

Socially excluded communities tend to be isolated geographically, which affects both whether a school is available in the community and the quality of that school. This, in turn, affects children's school participation and learning. In Lao, PDR, the poor quality of rural schools contrasted sharply with schools in urban areas, and was negatively related to girls' probability of attending school (King and van de Walle 2007). In some countries, rural residence is confounded with other bases of exclusion (such as ethnicity, caste, tribe, and poverty), so that controlling statistically for these characteristics often completely eliminates the independent association between rural residence and school participation. For example, analyses of household data from India and Nigeria that controlled for household wealth and other factors found that rural children were not disadvantaged in attending school (UIS 2006).

The low educational attainment of parents or the household head affects enrollment in most circumstances. Recent studies from Guatemala, Lao PDR, Nepal, Pakistan and China show that where schooling is not universal, higher levels of parental education have sizable and significant effects on children's enrollment (Lewis and Lockheed 2007). In Nepal, children whose parents had some formal education were 2.5 times more likely to attend school than children whose parents lacked formal education (Stash and Hannum 2001). In Lao PDR, children of more educated parents were more likely to be attending school (King and van de Walle 2007).

In many countries cultural factors work to remove rural and indigenous girls from school, particularly after primary school. Parental concerns over allowing adolescent girls to mix with boys and the lack of separate latrines are often paramount for keeping girls at home (Herz and Sperling 2004). Finally, parental beliefs about the current and future occupational and social roles of boys versus girls affect their expectations for children's schooling. For example in Bangladesh and rural China some parents think that a good marriage is more important than a good job, which affects their expectations for daughters' schooling (Mahmud and Amin 2006; Li and Tsang 2005).

Poverty is the most persistent and significant reason why marginalized girls do not enroll in or complete primary or secondary school. In Guatemala poor Mayan females have the lowest school

participation and are least likely to remain in school. By age 16 only 4 percent of "extremely poor" indigenous girls attend school, compared with 20 percent of "poor" indigenous girls and 45 percent of "non-poor" indigenous girls (Hallman and Peracca 2007). In one multivariate analysis, an interaction term for indigenous females and poverty was significantly correlated with female school attendance, suggesting that the gender-poverty effects are greater than the sum of the two characteristics considered independently (Hallman and Peracca 2007). In Laos PDR, household income had a strong impact on the probability of girls from non-Lao-Tai minority groups (Mon-Khmer, Hmong-lu Mien, Chine-Tibetan) going to school. At the primary level, 46 percent of poor rural non-Lao-Tai girls age 6-12 were enrolled, compared with 55 percent of poor rural non-Lao Tai boys the same age and 70 percent of poor rural Lao-Tai girls; at the lower-secondary level, 3 percent of poor rural minority girls age 12-15 were enrolled in school, compared with 9 percent of poor rural minority boys and 37 percent of non-poor rural Lao-Tai girls. When asked why they dropped out of school, 31 percent of 12-year olds reported cost as the key reason, and 35-40 percent of older children cited the need to work (King and van de Walle 2007). In Tajikistan, 68 percent of parents surveyed reported that cost was the primary reason for daughters not attending school (Silova and Magno 2004).

Girls suffer more than boys from economic shocks to households (Bjorkman 2006). In rural Pakistan unanticipated economic shocks, such as crop losses, reduce the likelihood that girls but not boys are in school. In rural Uganda negative income shocks (as proxied by rainfall variations) are associated with sharp declines in girls' school enrollment and girls' performance on the primary school-leaving examination; the impact on boys is much smaller and only marginally significant.

In all, marginalized groups suffer from multiple disadvantages that have a suppressing effect on education, in general, and on girls in particular. In the next section, we test empirically some of these effects.

4. Cross-Country Analysis

In this section, we examine the relationship between degree of ethnic and linguistic heterogeneity within a country and within-country gender gaps in primary school completion; we also examine these effects on overall learning. We hypothesize that countries that are more ethnically and

linguistically heterogeneous will have greater gender gaps in education. We are unable to directly examine the impact of heterogeneity on the gender gap within marginalized groups because education data that are disaggregated by gender within ethnic group are not available for most countries.

Data and approaches. We use an indicator of heterogeneity, "ethnolinguistic fractionalization (ELF)", that was developed by Alesina and others (2003) to explain the drivers of economic growth. The index, based on the work of ethnologists and anthropologists, captures the degree of racial and linguistic heterogeneity within 190 countries. ELF allows cross-country comparisons of fractionalization of ethnicity and language, but does not provide specific evidence of exclusion. A country could be highly heterogeneous with all groups reciprocally accorded the same level of esteem or value and there would be no social exclusion.[5] Social exclusion occurs only when one group is accorded lower esteem than another group. ELF is highly correlated with other measures of exclusion, including a new version of the index and a new index of ethnic diversity and geographical clustering (EDC) both constructed by Matuszeski and Schneider (2006).

We focus on three main schooling variables: the female primary completion rate, the difference between the male and female primary completion rates, and a learning score. Table 2 presents the variable descriptions and the data sources; summary statistics are provided in table 3. Schooling data come from the World Bank (2005a), Barrow and Lee (2000) and Crouch and Fasih (2004).

Few cross-national measures of actual learning are available, and the learning score measure is based on Crouch and Fasih's (2004) "imputed learning scores" for 55 countries. This measure is derived from countries' actual performance on various international tests, as equated to a common measure: an aggregate of the national average for science and mathematics scores on the Trends in International Mathematics and Science Study (TIMSS).[6]

[5] For example, Switzerland.

[6] TIMSS is a project of the International Association for the Evaluation of Educational Achievement (IEA), a nongovernmental organization that has sponsored cross-national assessments of achievement on a four-year cycle, typically for students who have completed four to eight years of school. The most recently published assessment involved 46 education systems, including 26 from low- and middle-income countries and was carried out in 2003; the 2007 assessment is underway in approximately 60 countries.

Table 2: Variable Description and Data Source

Variable Name	*Description*	*Source*
Female primary completion rate	The percentage of girls in the last year of primary school, minus the number of repeaters, divided by the total number of girls of official graduation age.	World Bank (2005a)
Difference in the male and female primary completion rate	Male primary completion rate minus the female primary completion rate	World Bank (2005a)
Learning score (imputed)	Scores from various sources equated to TIMSS 1999, supplemented with TIMSS 2003 scores	Crouch and Fasih (2004)
GDP per capita (log)	Atlas method	World Bank (2005a)
Ethnolinguistic fractionalization	The probability that two randomly selected individuals in a country belong to different groups	Alesina and others (2003)
Ethnolinguistic fractionalization squared		Alesina and others (2003)
Average years of schooling, female (age 25+)		Barro and Lee (2000)
Education expenditure (percentage of GDP)	Percentage of GNP accounted for by public spending on public education plus subsidies to private education at the primary, secondary and tertiary levels.	World Bank (2005a)
Female labor force participation rate	ILO database estimates of the extent to which women are active in the labor force	World Bank (2005a)
Socialist dummy	1 = socialist history; 0 = other	Authors
Road density	Total road network/land area	World Bank (2005a)
Rural population	Percentage of total population living in rural area	World Bank (2005a)

Table 3 Summary statistics for regression variables

Variable	*Mean*	*Standard deviation*	*Number of cases*
Female primary completion rate	78.91	26.43	129
Difference in the male and female primary completion rate (percentage of relevant age group)	3.67	8.73	129
Learning score	383.43	96.49	56
GDP per capita (log)	8.10	0.90	130
Ethnolinguistic fractionalization	0.46	0.25	136
Ethnolinguistic fractionalization squared	0.27	0.24	136
Average years of schooling, female (age 25+)	2.98	1.62	73
Education expenditure (percentage of GDP)	4.44	2.21	124
Female labor force participation rate	37.34	10.28	133
Socialist dummy	0.22	0.42	150
Road density (total network/land area)	38.74	57.22	145
Rural population (percentage of total population)	51.62	20.43	146

Because education development often parallels economic development (Baker and Le Tendre 2005), the analyses also controls for selected economic and development indicators: GDP per capita, road density and share of rural population.

The small number of countries for which data are available for average years of female schooling (73) and learning scores (55) combined with the uneven country coverage of other variables produces substantial differences in the number of observations for each analysis. The strong correlation among factors also poses difficulties. Correlations between the primary completion rate and GDP per capita (0.73) and average years of schooling (0.74) are particularly troublesome. We attempt to address the problem with instrumental variables; we report different models to try to ferret out the effects of the correlated variables.

We first examine the relationship between ELF and our schooling indicators (table 4). For all three estimates, ELF is highly correlated with schooling outcomes. Greater within-country heterogeneity is associated with lower rates of female primary school completion. A 1 percent increase in ethnolinguistic fractionalization leads to a .22 percent decrease in female primary completion (table 4 column 1). Moreover, greater within-country heterogeneity is associated with a larger gender gap in primary school completion. For the difference between male and female primary school completion, the dependent variable is calculated as log(male/female) to avoid the loss of observations where the male-female difference is less than or equal to zero. Column 2 shows that a 1 percent increase in ethnolinguistic fractionalization leads to .09 greater male advantage in primary school completion. Finally, learning is lower in more heterogeneous countries. For every 1 percent increase in ethnolinguistic fractionalization, learning scores are .17 percent lower (table 4 column 3). Thus countries with multiple ethnic and language groups are likely to have lower primary completion rates for girls, a widening gap between male and female completion rates, and lower overall achievement.

Table 4. Elasticities of primary completion and learning and ethnolinguistic fractionalization

	(1)	(2)	(3)
Coefficient	log (Female PCR)	log (Male PCR) – log (Female PCR)	log (Learning score)
Ethnolinguistic fractionalization, log	–0.22***	0.09***	–0.17***
	(–4.27)	(3.99)	(–3.65)
Constant	4.06***	0.17***	5.74***
	(2.8)	(6.46)	1)
Observations	8	8	5
R^2	0.14	0.12	0.20

* Significant at the 10 percent level.
** Significant at the 5 percent level.
*** Significant at the 1 percent level.
Note: Figures in brackets are *t*-statistics.

Our second set of analyses takes into account variations in level of development across countries, since such variation could affect school participation and learning. These indicators of development are highly inter-correlated, so it is not possible to include all of them in the same regression estimates. Tables 5-7 present the results from ordinary least-squares regression estimates for the full set of 112 developing countries and for various subsets, determined by data availability. In table 8, one of the variables has been instrumented.

Table 5. Determinants of Female Primary Completion Rate

	Female Primary Completion (percent of age cohort)						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
GDP per capita (log)	17.109***				15.299***		
	(6.07)				(4.61)		
Ethnolinguistic fractionalization	-20.816***	-35.946***	-22.879**	-42.1***	8.63	-17.71*	-16.589*
	(2.63)	(3.70)	(2.20)	(3.93)	(0.31)	(1.69)	(1.83)
Ethnolinguistic fractionalization^2					-17.356		
					(0.60)		
Average years of schooling, female (age 25+)					3.867**	9.862***	8.377***
					(2.58)	(6.04)	(4.66)
Education expenditure (% of GDP)		0.968	0.78	0.828		-1.742	-1.179
		(0.98)	(0.84)	(0.77)		(1.86)	(1.23)
Labor force participation rate, female			-1.211***	-0.369			
			(4.08)	(1.59)			
Socialist dummy		14.664***	31.652***		-8.993	-18.907*	-14.188
		(4.30)	(5.80)		(1.05)	(1.74)	(1.35)
Road density (total network/land area)	0.003		0.098***	0.081**		0.018	
	(0.14)		(3.48)	(2.46)		(0.90)	
Rural population (% of total population)		-0.449***					-0.22
		(3.87)					(1.67)
Constant	-49.881**	111.839***	121.389***	106.723***	-54.695**	66.796***	80.076***
	(2.02)	(15.42)	(11.42)	(10.13)	(2.04)	(7.31)	(8.30)
Number of observations	112	100	94	94	63	53	53
R^2	0.544	0.439	0.447	0.265	0.736	0.629	0.651

* Significant at the 10 percent level.
** Significant at the 5 percent level.
*** Significant at the 1 percent level.
Note: Figures in brackets are *t*-statistics.

Heterogeneity and female primary completion rate. Table 5 examines determinants of female primary school completion rates. We estimate four models using the full or nearly full set of cases (columns 1-4) and three models in which the number of cases is sharply reduced (columns 5-7). For all but one of these models, ELF remains a statistically significant predictor, which shows the importance of ethnic and language heterogeneity in decreasing the likelihood of girls completing primary school. For the full set of countries, GDP per capita is strongly and significantly related to female primary school completion rate (column 1) as is another indicator of development, the rural share of the population (column 2), but only when not included in the same model as GDP per capita. The model in column 3 omits GDP per capita but introduces another indicator of development, road density, and indicators of investment in education (education expenditure as percent of GDP), labor market opportunities for women (female labor force participation rate) and an indicator of socialist history reflecting the considerable emphasis placed on education for all children in the former Soviet Union and Eastern Europe, to capture both national attention to education and labor force opportunities for women. We see that road density is associated with higher female primary completion rate, perhaps indicating greater access to schools. Surprising, more female labor force participation is associated with lower completion rates, but a socialist history has an extremely high marginal effect on the female primary completion rate; expenditures on education have no marginal effect. Excluding the socialist indicator (column 4) changes the significance of the female labor force participation rate.

The models presented in table 5 columns 5-7 show the importance of past investments in female education but are limited to the 53 countries for which these data are available. Past investment in female education, as indicated by the average number of years of schooling attained by women age 25 and above, is strongly and consistently related to the female primary completion rate circa 2000 (the simple correlation is 0.74). For these countries, a socialist history is no longer significantly associated with the female primary completion rate and other indicators of development (road density and percent of rural population) are no longer statistically significant. Ethnolinguistic fractionalization remains negative and highly significant, suggesting the robustness of the factor. These results bolster the hypothesis that ethnic heterogeneity slows progress in education for girls, consistent with the simpler results presented in table 4.

Heterogeneity and gender disparity in primary completion. We tested the determinants of the disparity between completion rates of boys and girls using four different models (table 6). Again we look at models for the larger data set (columns 1, 2 and 3) and for the smaller data set (column

4). The findings show a strong effect of GDP per capita, average years of schooling for women, and particularly ethnolinguistic fractionalization; the ethnolinguistic fractionalization and ethnolinguistic fractionalization squared combination is significant, a configuration that was consistently unimportant in the female primary completion rate regressions.[7] The model in column 2 suggests that the effect of ethnolinguistic fractionalization is exponential, since higher levels of heterogeneity show stronger positive effects on gender disparity in completion. Education expenditure is unrelated to the gender gap in primary school completion (columns 2-4). For the small data set, higher levels of female schooling and a socialist history are both associated with smaller gender gaps.

Table 6. Determinants of gender disparity in primary school completion

	Difference between male and female primary completion rates			
Variable	(1)	(2)	(3)	(4)
GDP per capita (log)	–2.93***	–3.18***		
	(2.88)	(3.46)		
Ethnolinguistic fractionalization	10.61***	–18.32*	17.88***	16.43***
	(3.01)	(1.77)	(4.42)	(3.52)
Ethnolinguistic fractionalization squared		31.69***		
		(2.72)		
Average years of schooling, female (age 25+)				–2.93*** (4.49)
Education expenditure (percentage of GDP)		–0.32	–0.44	0.13
		(0.92)	(1.39)	(0.24)
Female labor force participation rate			0.10	
			(1.41)	
Socialist dummy				11.59*** (4.86)
Road density (total network/land area)			0	0.02*
			(0.45)	(1.89)
Rural population (percentage of total population)	0.04			
	(1.15)			
Constant	20.77**	30.52***	–7.04**	2.75
	(2.06)	(3.60)	(2.44)	(0.77)
Number of observations	111	97	94	53
R^2	0.39	0.46	0.3	0.60

* Significant at the 10 percent level.
** Significant at the 5 percent level.
*** Significant at the 1 percent level.
Note: Figures in brackets are *t*-statistics.

Heterogeneity and learning. Heterogeneity would also be expected to affect learning outcomes, through mechanisms operating between schools (to reduce school inputs) and within schools (to discriminate against "minority" children). The other variables explaining school completion would also be expected to influence learning. However, for estimating correlates of achievement at the country level, it is important to take into account differences across countries in the share of children in school. In countries in which not all children attend school, those who continue in

[7] Unlike the high correlation between the female primary school completion rate and both GDP per capita and average years of schooling, the gender disparity in the primary school completion rate variable is not highly correlated with either of them.

school are likely to be both more advantaged and better performers. We do this in two ways, first we include the average years of schooling of adult women, the variable we have used in looking at determinants of participation (table 7). Second, we add to the learning regressions the primary completion rate for girls. Since the female primary completion rate is highly correlated with the learning variable, we use an instrumented variable, $\hat{P}$ - F, the primary completion rate of females as predicted by log GDP per capita, and educational expenditure as a percentage of GDP (table 8). In both cases, we are restricted to the smaller data set and show results for between 33 and 54 countries.

Table 7. Determinants of Learning

	Imputed average TIMSS Score					
Independent Variables	(1)	(2)	(3)	(4)	(5)	(6)
GDP per capita (log)	50.92***			59.85***		75.42***
	(2.95)			(3.42)		(3.71)
Ethnolinguistic fractionalization	-68.67	-122.41***	-181.19***	-85.14	-95.02**	-61.37
	(1.28)	(3.17)	(3.91)	(0.55)	(2.22)	(0.40)
Ethnolinguistic fractionalization²				11.49		45.97
				(0.07)		(0.26)
Average years of schooling, female (age 25+)						-8.15
						(0.84)
Education expenditure (% of GDP)		0.29	-0.73	1.64	4.16	
		(0.04)	(0.08)	(0.20)	(0.76)	
Labor force participation rate, female			2.09		4.70***	
			(1.60)		(5.42)	
Socialist dummy		115.38***				92.24**
		(6.77)				(2.32)
Rural population (% of total population)					-3.33***	
					(5.42)	
Road density (total network/land area)	0.47**	0.20	0.61***			
	(2.38)	(1.07)	(2.82)			
Constant	-24.49	408.62***	375.81***	-84.17	390.06***	-216.79
	(0.16)	(13.16)	(7.56)	(0.54)	(8.75)	(1.15)
Number of observations	54	49	48	48	48	37
R^2	0.55	0.52	0.42	0.48	0.63	0.59

* Significant at the 10 percent level.
** Significant at the 5 percent level.
*** Significant at the 1 percent level.
Note: Figures in brackets are *t*-statistics.

The models in Table 7 show a strong and significant positive effect of GDP per capita on average learning scores (columns 1, 4 and 6). In models not including GDP per capita (columns 2, 3 and 5) the effects of ethnolinguistic fractionalization are highly significant and in the expected negative direction. A socialist history is strongly and significantly associated with higher

learning, even when controlling for GDP per capita. Road density is strongly and positively associated with higher learning (columns 1 and 3), except in the model including a socialist history (column 2). Female labor force participation is also strongly associated with higher levels of learning in one model (column 5), suggesting that the more women leave the household and are employed, the greater the potential returns to their education and hence the greater the motivation for girls' learning.

Table 8 presents the results for the instrumented variable, $\hat{P}\text{-}F$, the primary completion rate of females as predicted by log GDP per capita, and educational expenditure as a percentage of GDP. In all four regressions the coefficient for ethnolinguistic fractionalization is large and in two models (columns 1 and 3), they are highly significant. The coefficient for the instrumented female primary completion rate, $\hat{P}\text{-}F$ is positive and significant (columns 2 and 4), even when controls for socialist history and female labor force participation are included. This effect suggests that education systems with greater participation of girls are also more effective in teaching all children. The effect of a socialist history is also large and statistically significant as is the effect of female labor force participation; a high share of rural population is negatively associated with learning, which is expected given the more limited access to and lower quality of available schooling outside of urban areas.

Table 8. Determinants of learning, with instrumented variables

	Imputed average TIMSS score			
Variable	(1)	(2)	(3)	(4)
Ethnolinguistic fractionalization	–129.9***	–35.42	–109.2***	–45.6
	(–3.64)	(–0.61)	(–2.92)	(–0.87)
Female primary completion rate (instrumented)		2.36**		1.96**
		(2.65)		(2.33)
Socialist in 1990	104.6***	103.9***		
	(5.51)	(4.77)		
Female labor force participation rate			4.72***	4.51***
			(5.38)	(5.56)
Road density (total network/land area)	0.26	–0.01		
	(1.52)	(–0.06)		
Rural population (percentage of total population)			–3.06***	–2.3***
			(–5.79)	(–3.49)
Constant	409.8***	177.2*	399***	178.2*
	(20)	(1.88)	(10.5)	(1.73)
Number of observations	55	46	54	46
R^2	0.52	0.62	0.62	0.67

The cross-country analysis suggests the importance of five factors – national income, within-country heterogeneity, share of population living in rural locations, women's labor force participation, and a history of educating women -- in explaining both primary school completion for girls and the observed disparity in primary school completion between girls and boys. All of these factors except heterogeneity also explain learning.

5. Policy Implications and Discussion

Over the past decade, much research from developed and middle-income developing countries has focused on how to reach poor children and those from socially excluded groups, (see, for example, Wells and others' 2005 review of desegregation policy in the US and Williamson and other's 2006 review of social justice in education, and Lewis and Lockheed 2006 for a review of evidence across developing countries). A variety of programs and approaches have been implemented that have raise enrollments, sustained attendance and equalized learning outcomes of socially excluded children. But little is known about how to reach socially excluded girls, in particular.

What we can infer, however, is that getting and keeping socially excluded girls in school entails both different approaches and higher costs. Cultural variations, linguistic differences, and the special needs of girls drive up costs, because they require new methods tailored to each group. Investment on two fronts -- improving the supply of school opportunities and boosting the demand for education -- is essential for enrolling and retaining excluded children in general, and girls in particular. Hard evidence about the effects of these programs for excluded girls is limited, and excellent work by multilateral agencies and NGOs is rarely empirically evaluated.

Improving and diversifying the supply of education. Many countries still lack good quality educational opportunities for all students, and improving and diversifying the supply of education for excluded children in these countries will be essential. This could entail altering education policy and addressing overt discrimination, expanding schooling options for reaching marginalized children and improving the quality of schools that serve marginalized groups.

Policies that appear fair on the surface may be subtly biased against girls from excluded groups. For example, policies that require school to be taught in a majority language may have greater effects on girls than on boys, since girls from excluded groups often have fewer opportunities

than boys to experience the majority language outside their home. Similarly policies that require either single-sex schools or coeducation may limit girls' opportunities, according to cultural conditions. Discrimination as promoted in school textbooks must be addressed Few – if any – studies have examined how girls from excluded groups are treated in textbooks, but the treatment of minorities in some textbooks reinforces negative stereotypes.

Parental concerns for the physical safety of daughters may mean that nearby community schools and non-formal alternative schools are better able to attract and retain girls from excluded groups than are formal schools located at a distance. Programs that respond to these parental concerns appear effective. For example, in Rajasthan, India, community schools employed paraprofessional teachers, allowed the community to select and supervise teachers, and hired part-time workers to escort girls from excluded groups to school; children in these schools had higher enrollment, attendance and test scores compared with students in public schools. (Banerjee, Cole, Duflo, and Linden. 2005). Preschools can help excluded children more easily transition to formal schools. In Brazil, Turkey, Bolivia and India, preschool programs that involved both mothers and children from excluded groups have been effective in reducing children's subsequent primary school dropout and in boosting their achievement (Paes de Barros and Mendoca 1999; Kagitcibasi 1996; Behrman, Cheng and Todd 2000; Kaul, Ramachandran and Upadhyaya 1993). Compensatory programs also help. Brazil, India and Spain all have offered targeted, compensatory in-school or after-school programs designed to bolster the performance of disadvantaged students, which have helped children of excluded groups stay in school and have raised their achievement (Lewis and Lockheed 2006; Banerjee and others 2003; Martin 2000). For example in India, where young women were hired to tutor children who were lagging behind, the largest achievement gains were recorded for the most economically disadvantaged children (Banerjee and others 2003). Radio, television and computers can also expand opportunities for girls, particularly for girls who are secluded at home after primary school.

School quality matters more for excluded girls than for boys and children from mainstream families. Girls are less likely to enroll in and more likely to drop out from poor quality schools, compared with boys. Poor quality schools can include schools with delipidated infrastructure -- leaking roofs, shattered walls and dysfunctional sanitary facilities -- as well as those whose teachers are absent and where textbooks and teaching materials never arrive (Lockheed and Verspoor 1991). Most research on the effects of poor quality on girls enrollment is correlational, but studies in Egypt, Kenya, Laos PDR and Pakistan suggest that girls' enrollment is more

sensitive than that of boys to improvements in school quality (Lloyd, Mensch and Clark 2000; Lloyd and others 2003; Lloyd, Mete and Grant 2007; King and van de Walle 2007). Evaluations of a quasi-experiment in India --a government program called Operation Blackboard that provided an additional teacher, classroom and instructional materials to single-teacher schools generally in remote rural areas – found that the program increased girls' (but not boys') primary completion rate, boosted reading achievement for all students and reduced the gender gap in reading achievement (Chin 2005; World Bank 1996).

Weak student performance is also a good indicator of poor school quality, and directing quality improvement programs at poorly performing schools has positive benefits for excluded children. An example comes from Chile. There, three educational programs in the 1990s provided additional support to improve the quality of the lowest performing schools. These programs not only boosted learning, they substantially reduced the gaps in learning achievement between indigenous and non-indigenous students -- by 30 percent (McEwan 2006). Poor quality can also mean schools that are not adapted to local conditions or communities. An essential adaptation accommodates linguistic heterogeneity through bilingual education and introducing reading, writing and thinking skills in the child's mother tongue is particularly beneficial for excluded girls' school enrollment and retention (Benson 2005).

Creating incentives for households to send girls to school. The second line of attack is to create incentives for households to send girls to school. Evidence regarding incentives is less clear, and needs more focused evaluation, but conditional cash transfers, scholarships and school feeding programs seem to have promise.

Conditional cash transfers extend resources to households to defray some of the costs of sending their children to school, tying social assistance payments to desirable behaviors. Although challenging to administer in many settings, CCTs offer incentives for families to send children to school. Programs in Bangladesh, Ecuador and Mexico, among others, have been successful, although their specific impact on excluded groups has not been assessed. In one case, the experience of Progressa in Mexico, suggests that without careful targeting, resources spent on CCTs may not have the desired results (de Janvry and Sadoulet 2006). Specifically, the program benefited indigenous boys more than indigenous girls. Another conditional cash transfer program in Ecuador boosted school enrollment overall by 3.7 percentage points, but did not differentially benefit girls or minority students (Schady and Araujo 2006).

Scholarships and stipends also offset the cost of schooling. Secondary school scholarship programs offer girls financing and encouragement to stay in school. They compensate families for the direct and indirect costs of education. They have been highly effective in several countries, notably Bangladesh, where scholarships increased girls' enrollment to twice that of the national average (Khandker, Pitt and Fuwa 2003). In Kenya, even the opportunity to earn a scholarship was found to boost student achievement (Kremer, Miguel and Thornton 2004). Stipend programs compensate parents for the cost of schooling, and are tied to such school inputs as uniforms, books, materials and transportation. Fee reductions for various complementary school services as school handbooks, ID cards or pedagogical materials can have the same effect as such stipends. In Bogata, Colombia, fee reductions for children in the poorest households boosted boy's enrollment in grades 1-9 while those for children in poor (but not the poorest) households boosted girls' enrollment in grades 10-11 (Barrera-Osorio, Linden and Urquiola 2007).

Various types of school feeding programs show an association with higher enrollment and attendance (Levinger 1986; Del Rosso 1999). In Kenya meals raised attendance in program schools 30 percent relative to schools without a free lunch, and test scores rose substantially. But most benefits accrued to boys rather than to girls, and had little impact on reducing the gender gap (Vermeersch and Kremer 2004).

Changing expectations.. Expectations for performance held by parents, teachers and children themselves are powerful determinants of success. Expectations are particularly salient in heterogeneous classrooms that include both boys and girls and students from various ethnic or social groups (Cohen and Lotan 1997). Few interventions to change expectations have been carried out in developing countries and have tended to focus on changing parent and community expectations to include schooling for all children. Such programs include the Total Literacy Campaigns in India and similar efforts in Bangladesh (World Bank 1996). We are unaware of programs that directly focus on changing parent, teacher, or self-expectations for excluded girls. There is evidence from developed countries, however, that lowering structural barriers to schooling tends to change both aspirations and expectations for education, particularly for girls.

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Annex A. Recent Studies of Gender Within Ethnicity Differences in School Participation and Learning

Country	Study	Finding
Participation (direct comparisons between girls and boys from excluded groups)		
Bolivia	Jimenez 2004	• Quechua- and Aymara-speaking indigenous girls are less likely to enroll in school than non-indigenous children • Quechua- and Aymara-speaking indigenous girls are more likely than non-indigenous children to discontinue their schooling prematurely.
Bolivia		• The first grade repetition rate of indigenous children is 30 percentage points higher (43.4 percent) than that of nonindigenous children (13.7 percent).
Bolivia	Jimenez, Landa and Yanez 2006	• 26 percent of indigenous women aged 15 and above had no schooling, compared with 8 percent of indigenous men the same age • Indigenous girls age 7-14 have a 39 percent probability of being in school; indigenous boys the same age have a 64 percent probability of being in school
Chile	McEwan 2004.	
China	Hannum 2002	• The probability that Han children would enroll in school was higher than that of minority children in 1992, with about half the difference in the probability of enrolling due to differences in family background and county of residence.
China	Hannum and Adams 2007	• In rural counties where minorities accounted for roughly one-third of the population, minority participation rates were substantially lower than those of Han children. • Girls' participation was inconsistent across these minority groups. Among 10 minority ethnic groups, 5 were more likely to enroll girls in school, while 4 were less likely to do so. Among Han children and children from one minority group, no gender differences in enrollment were observed.
Ecuador	Larrea and Monteneg ro Torres	• 68 percent of indigenous girls age 5-18 attend school compared with 69 percent of indigenous boys the same age • 33 percent of indigenous women aged 15 and above had no schooling, compared with 14 percent of indigenous men the same age
Ecuador	Garcia Aracil and Winkler 2004.	• Controlling for residence and socioeconomic status, the school completion rate for indigenous girls in Ecuador is half that of non-indigenous girls and only one-third that of all boys. • The probability of primary school drop-out was higher for girls in rural than in urban areas, and ethnicity was a factor explaining drop-out from rural but not urban schools. Girls living in urban areas, whether indigenous or not, were 34 percent more likely to stay in school than males but 35 percent less likely to be in school than males in rural areas.
Guatemala	Hallman and Peracca 2007	• 25 percent of indigenous girls aged 15-19 have completed primary school compared with 45 percent of indigenous boys aged 15-19 • A higher share of indigenous boys than indigenous girls have ever been in school • Being indigenous raises the probability of rural drop-out by almost 30 percent
India	Wu, Goldschmidt, Boscardin and Azam 2007	• About 35 percent of tribal girls aged 15 are enrolled in school, compared with about 60 percent of tribal boys.
India	Census of India 2001.	• 63 percent of girls aged 7-14 from scheduled castes or scheduled tribes are enrolled in school, compared with 74 percent of boys aged 7-14 from the same groups.
Laos	King and van de Walle 2007	• 48 percent of rural Hmong-lu Mien girls age 6-12 are enrolled in school, compared with 66 percent of rural Hmong-lu Mien boys and 81 percent of rural Lao-Tai girls the same age • 33 percent of rural Chine-Tibetan girls age 6-12 are enrolled in school, compared with 39 percent of Chine-Tibetan boys the same age • 6.5 percent of rural non-Lao Tai girls age 12-15 are enrolled in school, compared with 12 percent of rural non-Lao-Tai boys and 32 percent of rural Lao-Tai girls the same age

Mexico	Ramirez 2006	• 27 percent of indigenous women aged 15 and above have no schooling, compared with 17 percent of indigenous men. • Indigenous women age 15-21 completed on average 6.5 years of school, compared with 7 years completed by indigenous men
Pakistan	Lloyd, Mete and Grant 2007	• In rural communities, girls' school attendance rates were 45 percentage points below those of boys for the lowest income group but only 15 points below boys for the highest income group
Peru	Cueto and Secada 2004.	
Peru	Trivelli 2006	• Indigenous women aged 15 and above completed 5.6 years of school, compared with 7.6 years for indigenous men of the same age • Iindigenous girls aged 7-14 completed 3.5 years of school, compared with 3.6 years of school for indigenous boys of the same age
Nepal	Stash and Hannum 2001	• Boys 7 times more likely to enter school than girls (controlling for caste and SES) • High caste children and elite Newar children 4-5 times more likely to enter school than low caste children (controlling for gender and SES) • High caste boys are 1.5 times more likely to enroll in school compared with high caste girls (controlling for caste, gender and SES) • Newar boys are half as likely as Newar girls to enroll in school (controlling for caste, gender and SES)
South Africa	Lam, Ardington and Leibbrandt 2007	• Controlling for SES and past school performance, African girls were more likely to be enrolled in school than African boys, • There were no gender differences among Colored children
Vietnam	Van de Walle and Gunewardena 2001.	
Participation (estimated comparisons between excluded girls and majority boys)		
India	UIS 2005	• Controlling for home background (parental education, household size, wealth, religion and caste), community factors (region, urban vs. rural), girls age 6-10 had 5.9 percent percent lower probability of attending school, compared with boys the same age, and tribal children had a 3.5 percent lower probability of attending school than non-tribal children • Thus, tribal girls had a 9.4 percent lower probability of attending school compared with non-tribal boys
Nigeria	UIS 2005	• Controlling for residence and SES, girls age 6-10 have a 12 percent lower probability of attending school compared with boys the same age, and Hausa-speaking children have a 24 percent lower probability of attending school compared with Yoruba-speaking children • Thus Hausa-speaking girls aged 6-10 have a 36 percent lower probability of attending school than Yoruba-speaking boys
Sri Lanka	Arunatilake 2006	• Controlling for SES and location, girls age 9-11 were 3 percent less likely to be in school compared with boys the same age, and Tamil children were 7 percent less likely to be in school than Sinhalese children • Thus, Tamil girls age 9-11 were 10 percent less likely to be in school than Sinhalese boys the same age
Vietnam	Nguyen 2006	• Controlling for SES and region, girls age 6-18 were 55 percent as likely to be enrolled in school as boys, and non-Kinh (minority) children were 33 percent more likely to be enrolled in school than Kinh (majority) children • Thus, non-Kinh girls were 22 percent less likely to be enrolled in school as compared with Kinh boys the same age
Performance		
Ecuador	Garcia Aracil and Winkler 2004	• Indigenous girls scored higher than indigenous boys on tests of math • There were no significant gender differences on tests of Spanish
Laos	Postlethwaite personal communication 2006	• Hmong girls scored lower than Hmong boys on a math test • There were no significant gender differences on a test of reading comprehension

Peru	Cueto and Secada 2004	• Aymara girls scored lower than Aymara boys on tests of math and reading comprehension, • There were no significant gender differences among Quechau children
South Africa	Lewis and Lockheed 2006	• In Afrikaans-medium schools non-Afrikaans girls (who never spoke Afrikaans at home) scored lower on the TIMSS mathematics test than non-Afrikaans boys • In English-medium schools the scores of non-English girls (who never spoke English at home) were similar to those of non-English boys.
Performance (estimated)		
Guatemala	McEwan 2006	• Controlling for SES, Grade 4 girls scored 2.7 standard deviations below boys on tests of math and .12 standard deviations below boys on tests of Spanish, and Mayan children scored .46 standard deviations below non-Mayans on tests of math and .89 standard deviations below non-Mayans on tests of Spanish • Thus, Mayan girls scored .72 standard deviations below non-Mayan boys in math and 1 standard deviation below non-Mayan boys on Spanish
India	Wu, Goldschmidt, Boscardin and Azam 2007	• Controlling for SES, Grade 9 girls in Rajasthan scored 3.7 percentage points below Grade 9 boys on tests of math, and scheduled tribe children scored 0.9 percentage points below non-scheduled tribe children • Thus, girls from scheduled tribes scored nearly 4.6 percentage points below majority boys on tests of math
Vietnam	Nguyen 2006	• Controlling for SES and region, girls age 6-18 were 43 percent less likely to obtain a good/excellent grade on final grade and non-Kinh children 6-18 were 46 percent more likely to obtain a good/excellent grade • Thus, non-Kinh girls were 3 percent more likely to obtain a good/excellent grade compared with Kinh boys of the same age