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Father Absence and the Reverse Gender Gap in Latin American Education

Abstract: *Recent work on gender differences in academic performance in wealthy countries highlights the importance of family structure: Boys' education suffers more than girls' education does when biological fathers are absent. We explored whether high rates of father absence in Latin America and the Caribbean might help explain why girls in the region have been more likely than boys to complete secondary school for decades. Data from the Demographic and Health Surveys instead demonstrated that the effect of father absence did not differ between boys and girls. The reverse gender gap in Latin American education cannot be explained by father absence compromising boys' on-time progression at ages 9-14 more than girls'. In the United States and other high-income countries, boys are particularly disadvantaged by father absence in poorer households, but in Latin America and the Caribbean poorer households may have higher levels of pro-male bias that offset any similar pattern.*

Father Absence and the Reverse Gender Gap in Latin American Education

Introduction

The United Nations Sustainable Development Goals for 2030 include all boys and girls completing secondary school. This is more ambitious than the Millennium Development Goals for 2015 that called for gender equality—but not universality—in secondary education. It seems that in addition to setting more ambitious goals, part of the reason that gender equality in secondary education is no longer an explicit goal is that boys' educational outcomes would need to be improved in many countries in East Asia, Southeast Asia, and Latin America (Jones & Ramchand 2016). This runs counter to the most common understanding of what it means to promote gender equality, namely helping girls catch up with boys.

Broadly speaking, boys tend to have the greatest educational advantages relative to girls at low levels of socioeconomic development. At higher levels of development and with higher overall enrollments, boys' advantage decreases (Wils & Goujon 1998). Girls were less likely than boys to be enrolled in secondary school in almost every region in the developing world in 1990, and much progress in this regard over the next quarter century has left girls disadvantaged only in Oceania, sub-Saharan Africa, and Southern Asia (United Nations 2015). The gender gap in education has reversed in most industrialized countries, with girls more likely to graduate from secondary school than boys (DiPrete & Buchmann 2013; see also UNICEF 2016 that documents significantly lower standardized test scores for boys in most OECD countries).

Latin America and the Caribbean is an outlier. Girls' educational disadvantage began disappearing in the region long ago. The gender gap in completed years of schooling closed for the cohort born in the early 1950s in six Latin American countries (Duryea, Galiani, Nopo, & Piras, 2007). This was the same birth cohort in which women in the United States began

graduating from high school at higher rates than men (Autor & Wasserman 2013). It was the only region in the developing world where girls were enrolled in secondary school at higher rates than boys in 1990 (United Nations 2015). In the majority of countries in the region, girls of secondary school age are more likely to be enrolled in school, plus they are more likely to be progressing on time (Marshall & Calderón 2006). A reverse gender gap started to emerge in Latin America and the Caribbean at an unexpectedly early point in its socioeconomic development.

Here we investigate whether the large proportion of Latin America and Caribbean children reared apart from their biological fathers helps explain the reverse gender gap in education. Recent work on reverse gender gaps in high-income countries has shown that biological father's absence compromises boys' education more than it does girls' education, particularly in low-income households (Autor & Wasserman 2013; Christofides, Hoy, & Yang 2010; Riphahn & Schwientek 2015). Father absence is quite common among Latin American and Caribbean children. The region's rates of non-marital childbearing and cohabitation are the highest in the world (Scott, Wilcox, Ryberg, & DeRose 2015). Even with widespread cultural acceptance of cohabiting unions, they remain less stable than marriages (de Vos 2001; Ishida 2010). Among children aged 9-14 in Latin America and the Caribbean, large proportions (29-53% in the Demographic and Health Survey data in Table 3 below) do not live in the same household as their biological father.

The high rates of non-marital childbearing and union instability in the region could therefore explain the reverse gender gap in secondary education in the region if father absence compromised boys' education more than girls' education. We tested whether the biological father's absence was related to on-time progress through school in different ways for boys and

girls using Demographic and Health Survey data from ten countries across Latin America and the Caribbean.

How Does a Reverse Gender Gap Emerge?

Traditional gender gaps in education—those that favor boys over girls—often prevail where parents perceive the sacrifice of boy's labor in the short run as a better investment than a similar sacrifice of girl's labor. The reasons can be quite diverse, ranging from the gender wage gap in local employment markets to gendered expectations for future support to outright bias. Regardless of the mix of underlying causes, a number of changes that accompany socioeconomic development undermine the utility of favoring boys because these changes increase the value of women's education more than men's. First, lower fertility means that a smaller portion of women's adult lives is dedicated to reproduction, which, in turn, increases the returns to education by increasing the time available for paid work. Second, family changes including later marriage, increased probability of divorce, and the rise in cohabitation all increase the value of women's education relative to when marriage provided a longer lasting, more secure alternative to economic independence (Bronson 2015; Buchmann & DiPrete 2006; Christofides et al. 2010; Goldin, Katz, & Kuziemko 2006). Third, the general expansion of education leading to larger proportions of educated women mean that men become less likely to "marry down" educationally: This increases the returns to education in the marriage market for women (Chiappori, Iyigun, & Weiss 2009; Ge 2011; Huang 2014; see also Han 2000 and Shafiq 2009). And finally, work-family reconciliation policies and other changes in work environments can decrease the motherhood wage penalty (Parro 2012).

The general expansion of education and lower fertility also contribute to gender equity in education through channels other than rising returns to women's schooling. The presence of

more schools decreases the distances that children travel to school that may, in turn, reduce barriers to girls' education where safety is a concern (Lavy 1996; Marshall 2011). Further, parents who are themselves educated are more likely to favor education equally for sons and daughters (Glick & Sahn 2000; Thomas 1990). Smaller families also increase the likelihood that all children will be educated rather than parents needing to discriminate among children (Parish & Willis 1993). Finally, girls are less likely to be pulled from school to care for younger siblings in lower fertility societies (Grant & Behrman 2010).

These changes help explain why boys' educational advantage over girls erodes, but they do not explain why girls' educational advantage emerges. Therefore, explanations for reverse gender gaps in education—those that favor girls over boys—often assume an underlying advantage for girls that is only realized after discrimination against girls subsides and returns to education grow. There is much evidence that even though there is little variation in cognitive skills by gender, girls commonly possess more non-cognitive skills (like attentiveness, task persistence, organization, and help-seeking) that are crucial to student success than boys do (Bertrand & Pan 2013; Cornwall, Mustard & Van Parys 2013; DiPrete & Jennings 2012; Duckworth & Seligman 2006; Jacob 2002). Girls also exhibit fewer behavioral difficulties in school (Autor & Wasserman 2013; Bertrand & Pan 2013; Goldin, Katz, & Kuziemko 2006; Owens 2016). Thus girls are in a better position to respond to increased returns to education because their superior non-cognitive skill sets make it easier for them to invest in education (Becker, Hubbard, & Murphy 2010).

While the assumed underlying advantage for girls seems to have a biological component (Bertrand & Pan 2013), it also results from the ways children are treated. Girls' socialization often prepares them well for school by rewarding traits like deference to authority, orderliness,

and persistence with repetitive tasks (DiPrete & Buchmann 2013). Entwisle and her collegues (2007) summarized the cumulative effects of socialization by saying that girls "find the student role more compatible than boys do." Further, teachers, especially female teachers, may favor students exhibiting the non-cognitive skills that are more common in girls (Bailey & Dynarski 2011). Boys' disadvantage is compounded when schools sanction non-conforming behavior more harshly when it occurs among boys (Owens 2016).

The Reverse Gender Gap and Social Class

Overall, the literature on the emergent female advantage in education supports the idea that returns to education have increased faster for girls (Cho 2007; Christofides et al. 2010; DiPrete & Buchmann 2006; Goldin, Katz, & Kuziemko 2006; Parro 2012; for a dissenting view see Hubbard 2011). The literature also highlights that men with low educational attainment have better job prospects than women with similarly low attainment because of jobs in construction, manufacturing, and protective services (Jacob 2002; Fortin, Oreopoulos, & Phipps 2015; see UNGEI 2013 for evidence that gender differences in job prospects among those with low education is also relevant in developing countries). This could help explain why the reverse gender gap is more pronounced (and growing more quickly) at lower levels of socioeconomic status (Autor & Wasserman 2013; Christofides et al. 2010; Jacob & Linkow 2011).

However, the larger reverse gender gap in disadvantaged groups may not have to do with labor markets alone. DiPrete and Jennings (2012) also suggest that the parents of lower-class children do not compensate for biologically based gender differences in behavioral propensities that disadvantage boys. This view is consistent with Annette Lareau's (2011) characterization of a class divide in parenting styles in which lower-class parents are more likely to follow a "natural growth" model, whereas middle- and upper-class parents are more likely to practice "concerted

cultivation." Student-appropriate behaviors seem more common among boys if they are cultivated. Highly educated parents spend large amounts of time in childcare-related activities (e.g., Guryan, Hurst, & Kearney 2008). Early elementary teachers also likely differ appreciably in their ability to transmit social and behavioral skills to children, and teacher quality varies between neighborhoods (DiPrete & Jennings 2012). High levels of investment may prevent boys from developing the kind of conduct problems that interfere with student success (Bertrand & Pan 2013), but boys in disadvantaged groups are less likely to receive such investments.

The Reverse Gender Gap and Father Absence

It takes only a very modest extension of the kind of reasoning that explains the reverse gender gap would be more pronounced at lower socioeconomic status to understand why it would also be greater in father-absent households: If boys need more investment to develop non-cognitive skills than girls do, especially the investment of time, then dual parent households will be better able to compensate for boys' disadvantage than single parent households. There is substantial evidence suggesting that boys suffer more from parental union disruption than girls do (Hetherington, Bridges, & Insabella 1998 review earlier literature; see also Autor & Wasserman 2013; Buchmann & DiPrete 2006; Cobb-Clark and Tekin 2014; Jacob 2002; Sommers 2001).

One of the reasons is that the amounts of attention and supervision boys receive decreases more than the amounts girls receive in the wake of parental union disruption. In dual parent households, fathers typically spend more parenting time with sons, and likewise mothers with daughters (Baker & Milligan, 2013; Gayle, Golan, & Soytas 2015; Lundberg, McLanahan, & Rose 2007). Single mothers also spend more time with their daughters than their sons—a larger discrepancy than in dual parent households—and single mothers also (perhaps consequentially) report feeling more emotionally distant from their sons (Bertrand & Pan 2013). Studies on

changes in parenting style following union disruption reviewed by Raymo (2016) found reduction in effective monitoring of children to be one of the most important changes. The additional autonomy that parents give boys relative to girls is exaggerated in single parent homes (Hoffereth & Goldscheider 2010 and literature reviewed therein). Because the vast majority of single parent households are single mother households, boys are also less likely to have same-sex role models within the household. This can affect boys' development and their educational goals (Palkovist 2013).

Bertrand and Pan (2013) emphasize not only that children receive fewer parental inputs in broken families, but that boys' non-cognitive development is more responsive to the level of inputs than is girls' non-cognitive development. In other words, it may be easier for girls to thrive with a lower level of parental involvement than it is for boys. This is consistent with research from Norway showing that maternal employment during early childhood decreased college achievement among sons, but not daughters (Fan, Fang, & Markussen 2015).

We stress here that the literature supports the idea that the biological father's presence and time investment are particularly important for boys' development. Cobb-Clark and Tekin (2014) showed that father absence increased delinquent behavior in boys (but not girls) irrespective of family income. There is good reason to believe that low income status and father absence each have independent effects.

Why the Gendered Effect of Father Absence Might Differ Across Contexts

Most of the literature reviewed above reports on studies of children in the United States. Riphahn and Schwientek (2015), writing on Germany, noted that research investigating the reverse gender gap outside of the United States was scant. Nonetheless, they found that the rising share of single parent households in Germany negatively affected boys' academic achievement more than girls'.

Similarly, Christofides and his colleagues (2010) found that the reverse gender gap in Canada grew most quickly over time within single-parent families and families in which the father had low occupational status. Both of these findings are consistent with the literature from the United States.

But do we expect biological father's absence to compromise boys' education more than girls' education in Latin America and the Caribbean? On the one hand, the answer is yes: To the extent that paternal inputs (including role modeling) are particularly necessary to develop boys' school skills, father absence would be expected to disadvantage boys more than girls everywhere. In addition, families may rely on sons' labor force participation to a greater extent where fathers are absent, a factor that would not be very relevant in countries with compulsory secondary education, but would be pronounced in countries with relatively large rural sectors. Boys in farm households are significantly less likely to attend school while girls are not, even in settings where boys are otherwise educationally advantaged (Bélanger & Liu 2004; UNGEI 2013). Parker and Pederzini (2001) found that father absence had a far greater impact on boys' schooling in rural areas of Mexico than in urban ones.

On the other hand, the Latin America and Caribbean region is 80 percent urban (PRB 2016), and labor force participation among single mothers might disadvantage girls more than boys to the degree that it increases girls' domestic responsibilities (see Chae 2016). Further, extended family may have important influences on schooling in a region where 29-52% of children live with adults other than parents (Table 3 below). In particular, boys may not lack male role models nor be as needed for productive work in households with other adult males, and girls' schooling is less likely to be compromised for care of younger siblings or domestic work in households with other adult females. Even though extended family members may free children

of both genders from work, extended households may have more patriarchal norms than nuclear households. This is because older members may be less educated, because less educated parents may be more likely to live in extended households out of economic need, and because household extension is generally a more traditional family form (Dodoo & Frost 2008).

Moreover, there is substantial evidence from countries in the Global South that lower-income parents allocate education preferentially to sons to a far greater degree than higher-income parents (Azam & Kingdon 2013; Bélanger & Liu 2004; Madhavan, Myroniuk, Kuhn, & Collinson 2016; Nguyen 2006; Parish & Willis 1993). This means that the same group of boys that is most disadvantaged relative to girls in high-income countries—low income boys—might nonetheless benefit from bias in their favor in less wealthy countries.

Finally, a large number of countries in Latin America and the Caribbean have sought to break the intergenerational transmission of poverty by providing cash benefits to low-income families on the condition that they keep their children in school (Stampini & Tornarolli 2012). These conditional cash transfers (CCTs) increase households' incentive and ability to keep all children in school. By promoting universal schooling, CCTs could offset the disadvantage that boys in fatherless households might otherwise have. Thus CCTs could reduce the contribution of father absence to the reverse gender gap in Latin American education.

Research on how the absence of biological parents affects children's schooling in less wealthy countries is plentiful (see review in DeRose et al. 2016), but most of it does not address the question of whether boys suffer differently from girls. Chae (2016) found similar post-divorce schooling attainment among boys and girls in rural Malawi as the result of girls being more like to progress through school on-time before divorce, but dropping out more often than boys in the wake of a divorce. Her findings are consistent with the idea that girls have better

school skills, but not consistent with boys suffering more from paternal absence. Madhavan et al. (2016) found that boys in parent-absent households in South Africa had faster educational progress than girls if grandparents were present, but not in other cases; they argued that the absence of parents opens up the space for other (older, more traditional) caregivers to exhibit pro-male bias. The only evidence from Latin America or the Caribbean on this question is from Uruguay where boys' education suffered more than girls' when not living with both biological parents (Cid & Stokes 2013). Cid and Stokes emphasized the Western European nature of Uruguayan gender roles and family patterns when discussing their finding, but Lopus (2015) found the same pattern for Ibo Island, Mozambique—a setting that can hardly be described as culturally similar to Western Europe.

We take up the question of whether high rates of father absence help explain the reverse gender gap in Latin American/Caribbean education using data from ten countries across the region. If father absence compromises boys' education more than girls' education, we would expect girls' advantage to be particularly pronounced among children with absent biological fathers. Even though gang activity, common delinquency, and other non-productive activities can easily interfere with school success (Salazar 2000; López, Opertti, & Vargas Tamez 2017), families with absent fathers may have a stronger need for boys' paid labor. For example, Colombian boys participate in construction, mining, and preparing coca leaves. In Honduras, 70% of rural boys who could still be in secondary school are working (Menezes-Filho, Fernandes, Narita, & Picchetti 2016). Boys' education could be particularly negatively affected by father absence in rural areas, in low-income households, and in families in which the mother is the lone adult: we test for gender differences in the effect of father absence in the overall sample as well as these sub-groups.

Data and Methods

Data

We used Demographic and Health Survey (DHS) data from ten Latin America and Caribbean countries. These data sets are nationally representative samples that include educational variables for all household members. These data also offered a critical advantage over many other data sets (including census data) in that they contained whether children's biological parents were in the household for all children under age 15.

The countries included were: Bolivia (2008), Brazil (1996), Colombia (2009-2010), Guyana (2009), Peru (2012), Guatemala (2014-15), Honduras (2011-12), Nicaragua (2001), Dominican Republic (2013), and Haiti (2012). Having data from Brazil that was two decades old was of particular concern, but we verified that the relationship between children's living arrangements and their education was the same in more recent data. Specifically, the 2010 Brazilian census was one of the few censuses worldwide that differentiated between children and stepchildren when coding the relationship to the household head. We estimated the effects of children's living arrangements on progression through school for the subsample of children who were children or stepchildren of the household head (for other children, we could not tell for certain whether their biological parents were living in the household); the effects were quite similar to results from the 1996 Brazilian DHS with the same sample limitation. We therefore retained the DHS data for Brazil.

Descriptive Statistics

We used a variation of the United Nations Gender Parity Index (GPI) for education to measure the extent of girls' advantage in national and subnational populations. The GPI divides the gross enrollment ratio for females by the gross enrollment ratio for males. If the resulting ratio is

between 0.97 and 1.03, education is considered gender equal. Where the ratio falls below 0.97, girls are disadvantaged, and where the ratio exceeds 1.03, girls are advantaged. However, instead of using gross enrollment ratios, we used the proportions progressing on time through school at ages 9-14. We used the grade attended in the most recent school year (if any) to create a dichotomous variable for on-time progression. We determined whether children were enrolled in the appropriate grade for their age using country-specific school start ages (either five, six, or seven). We did not count children only one year older than the expected age for their grade, as behind so that the timing of surveys relative to birthdays would not matter. Thus, nine year-olds were the youngest children that could be counted as not progressing on time in all countries (if they were not attending school in countries where school starts at age seven, if they were in the first grade where school starts at age six, and if they were in the first or second grade where school starts at age five). Secondary schooling in these countries begins at 11 or 12 years of age, and we observed children through age 14—the oldest age for which coresidence with biological parents was obtained in all ten surveys.

At ages 9-14 most children are attending school—83% in our entire sample, and substantially fewer only in Honduras. Given that secondary completion rates ranged from 16-65% around the times of the DHS data collections (World Bank Education Indicators), it is clear that many still-enrolled children in this age range will not ultimately succeed in completing secondary school. Because children who are behind because of grade repetition or late enrollment are at an elevated risk of dropping out (United Nations 2015), on-time progression represents a considerable educational advantage. Further, girls experience less grade repetition than boys across a wide variety of educational settings (Grant & Behrman 2010, see also World Bank data for our countries in Table 1). The traditional enrollment-based GPI would therefore

have underestimated girls' advantage, making on-time progression a more suitable variable for measuring gender differences.

Figure 1 shows the gender parity index for on-time progression for each country by age. A marked decline in girls' relative advantage at age 11 or 12 in some countries might indicate parents being more likely to enroll boys in secondary school. Nonetheless, in the countries where the overall reverse gender gap was substantial (see Table 2), girls' advantage generally continued to grow through age 14. In the six countries with data through age 17, the patterns were more erratic. The appendix compares the age patterns in the gender parity index for on-time progression according to whether the father is present in the household: the effects of father absence on gender parity in education do not depend on age in any consistent manner.

We calculated the gender parity index for children living apart from their fathers to observe whether boys were at a deeper disadvantage when fathers were absent. We then focused on particular subgroups in which father absence could be particularly disadvantageous for boys: in rural areas, in poor households, and in non-extended households (the multivariate model also distinguished between any extended family and any adult male extended family members, but we omitted this distinction from the descriptive statistics for parsimony). Our rural and poor groupings overlap, but do not replicate each other. Following Giroux (2008), we defined poor households as those that had at least two of the following: a poor floor (earthen), poor drinking water (neither a public nor private tap), or a poor toilet (not connected to septic or sewer). Across the whole sample, 49% of children residing in rural households also resided in poor households, ranging from 24% in Colombia to 83% in Haiti.

We used descriptive statistics on the gender parity index as an indication of whether the high rates of father absence in the region contribute to girls' educational advantage. We also

tested using multivariate analysis with numerous controls whether observed differences were statistically significant.

Multivariate Analysis

We used on-time progression as the dependent variable in logistic regression. Our models controlled for the clustering of observations within communities (sampling clusters).

Our key independent variable was the interaction between the child's gender (0=female; 1=male) and whether the child's biological father was living in the same household as the child (0=father present; 1=father absent). The interaction measures whether the effect of father absence on educational progress is significantly different for boys and girls. Fathers can be absent from the household for a wide variety of reasons including union dissolution, death, labor migration, and never having been in a marital or cohabiting union with the child's mother. Previous work on children's living arrangements and education in Latin America and the Caribbean estimated an almost identical educational disadvantage among children from all mother-only homes and among children of lone mothers (DeRose et al. 2016). For this reason, and because we are primarily interested in the differential effect of father absence on boys' and girls' educational progress, we do not distinguish among sources of father absence. (Our data also include only limited marital/union history information).

$$\log \quad \frac{p(on-time)}{1-p(on-time)} = \propto + \beta_1(\text{male child}) + \beta_2(\text{father absent}) + \beta_3(\text{male child} * \text{father absent}) + \beta_{4\ldots}\beta_{11(}\text{controls})$$

Significant differences in the effect of father absence in particular subgroups. We used the same model as for the full sample to test whether father absence had a gendered effect on educational progress in particular subgroups: 1) rural households, 2) poor households, 3) non-extended households (those with no adults in the household other than the biological parents),

and 4) households with no adult males (other than the father). The main effect of another adult male in the household was captured using a dummy variable, and we used a continuous variable for the number of other adults (top-coded at 6). We did not count adults in the household as extended family members if they were currently attending school themselves or not related to the household head. School responsibilities and not being part of the family may limit the potential contributions (direct and indirect) other adults would make to children.

Control variables. We employed a set of dummy variables representing sub-national regions to control for differences in access to school (Escobal, Saavedra, & Vakis 2012; Huisman & Smits 2009; Molinas Vega et al. 2012). Rural residence was also coded as a dummy variable. Our wealth measure is comparable across countries because we used an eight-point index of housing quality and ownership of consumer durables (method detailed in Giroux 2008). We included a dummy variable for at least one adult male in the household other than the child's father, a continuous variable for the number of other adults, and a dummy variable for whether any of the adults were over age 65. We controlled for parental education, defined as the higher of either the mother's or the father's education using six categories: no education, incomplete primary, complete primary, incomplete secondary, complete secondary, and higher. For children living with neither parent (and also in the few cases where parent's education was missing), we used education of the household head (see Case and Deaton 1999).

We also controlled for whether the child's biological mother lives in the child's household. Therefore, the reference category for children's living arrangements is living with both biological parents. The 2-7% of children in our sample living with only their biological father are not included in the reference category, and we thus avoid overestimating the effect of father absence among children living with neither biological parent.

Because younger children in the household can increase the chance of both boys and girls working (Marteleto & de Souza 2013 showed this for Brazil), we included the number of other children under age 15 continuously (top-coded at 6). We modeled child's age as a set of dummy variables because of the sharp drop-off in enrollments between primary and secondary school in many countries, and also differences between countries in the age at which secondary school should begin (eleven or twelve).

Results

Boys aged 9-14 were significantly less likely than girls to be progressing on-time through school in most of the countries in our sample, and the magnitude of boys' disadvantage varies widely (Table 4). The gender parity index for on-time progression at ages 9-14 ranges from 1.31 in the Dominican Republic down to 1.01 in Bolivia (Table 2). There are no countries in our sample where boys were advantaged, but there were three countries—Peru, Guyana, and Bolivia—where there was gender parity using the UN's 0.97-1.03 criterion. Note that gender parity exists only where on-time progression is coming close to universal: over 80% of 9-14 year-olds in these countries were progressing on-time. In Guatemala where 72% of all children were progressing on time, girls' advantage was quite modest (1.04). In the other countries where less than 60% are progressing on time at these ages, the gender parity index ranges from 1.16 to 1.31, reflecting substantial female advantage.

Figure 2 compares the overall gender parity index for each country to the gender parity index in subgroups of the population where boys might be particularly disadvantaged. We first considered all children with absent fathers. The only country where the effect of father absence differed significantly by gender was the Dominican Republic, and girls' advantage was *smaller* in father-absent homes (Table 4, Model 1). Thus there was no support in the overall sample for

the hypothesis that father absence disadvantages boys in the region more than it does girls.

We next considered whether father absence had a gendered effect in high-risk subgroups. The third (middle) set of bars in Figure 2 presents the gender parity index for rural children with absent biological fathers. Although boys' disadvantage seems exaggerated in this subgroup in Haiti and Colombia, these differences are not statistically significant (Table 4, Model 2). Ancillary analysis confirmed that boys' disadvantage was deeper in rural areas of (only) these two countries, but not particularly in rural father absent homes. In other words, the gender parity index is elevated for rural father absent boys in these countries because rural boys lag further behind girls than urban boys, not because father absence had a different effect on rural boys and girls.

The story among children in poor households with absent fathers is quite similar. The multivariate analysis revealed no significant gender differences among poor father-absent children (Table 4, Model 3). Clearly boys' disadvantage in on-time progression at ages 9-14 is not systematically deeper among poor children with absent fathers.

Finally, the furthest right bars in Figure 2 present the gender parity index for children who live with their mothers, but no other adults. That is, there are no other household members who can substitute for fathers either as role models or income earners. The gender parity index for this group is remarkably similar to the overall gender parity index in most countries. Girls' advantage is accentuated in households where the mother is the only adult in Haiti and Brazil, but not significantly (Table 4, Model 4). We further tested whether *poor* boys living with lone mothers suffered deeper disadvantage, but the results were largely the same as for all boys living with lone mothers (not shown). The statistical tests for father-absent children living with no other adult males are given in model 5 of Table 4: Even among children in households with no adult

male to potentially substitute for absent fathers as either as role models or potential earners, the reverse gender gap was not significantly larger in any country. The reverse gender gap was actually significantly attenuated in the no-other-male subsample in the Dominican Republic, just as among father absent children as whole (Table 4, model 1).

In sum, the same picture emerged from focusing on high-risk subsamples as held for national populations. In countries where fewer than 80% of children progressed through school on-time at ages 9-14, boys were disproportionately likely to fall behind or drop out. However, boys' educational progress was not significantly more vulnerable than girls' educational progress in father absent households, even in father-absent households that might have pronounced need for boys' labor.

Discussion

Girls have enjoyed an educational advantage over boys in Latin America and the Caribbean for decades. Although girls typically outperform boys in school in countries with relatively advanced educational standards, the Latin America and the Caribbean region has had poor educational progress. Latin America and the Caribbean led other developing regions in schooling in the 1960s, but now students in Eastern Asian and Pacific countries are more likely to complete secondary school, and the Latin American advantage over poorer developing countries has also dwindled (Barro & Lee 2013). Still less than 64 percent of children complete secondary school (López, Opertti, & Vargas Tamez 2017). Low rates of secondary school completion coexist with a gender gap in education favoring girls.

We explored whether high rates of father absence in the region contributed to the reverse gender gap in Latin American education. If boys' educational progress was compromised by father absence to a greater extent than girls' educational progress was, that could explain why

girls have outperformed boys in the region. Instead, father absence did not reduce the likelihood of on-time progress through school at ages 9-14 more for boys in any country (Table 4, Model 1). Even among groups in which boys would be most likely to be called upon to substitute for absent fathers in productive labor—rural households, poor households, and non-extended households—boys were not more disadvantaged by father absence than girls were (Table 4, Models 2-4). Thus the subsamples were not particularly informative except that they confirmed that the overall failure for a gendered effect of father absence to explain girls' advantage was not concealing its importance among high-risk boys.

Our investigation was limited by the use of cross-sectional data: Children's living arrangements at the time of the survey do not necessarily reflect their living arrangements when they fell behind in school or dropped out. But there is no reason to believe that this measurement error would differ between boys and girls. The evidence from Latin America and the Caribbean then diverges from that for richer countries in that father absence does not particularly disadvantage boys.

While we did not provide a direct test of whether cash transfers conditional on school enrollment (CCTs) help explain why the region constitutes an exception, we doubt that CCTs are the answer. First, the reverse gender gap in secondary education continued to grow from 2000-2015 (United Nations 2015) while CCT programs were becoming widely adopted (CEPAL 2017). Second, between-country variation in our data demonstrated that CCTs were neither necessary nor sufficient to attain gender parity in education. Specifically, in two of the three countries with gender parity in education, CCT programs had not been implemented at the time of the DHS data collection: Gender parity was achieved without CCTs. Also, in three of the five countries with the largest reverse gender gaps—the Dominican Republic, Colombia, and

Honduras—CCTs had been in place throughout the schooling careers of children in our sample (Stampini & Tornarolli 2012), and yet girls were still at a substantial educational advantage.

It seems possible that in Latin America and the Caribbean, the household need for male labor that would otherwise particularly disadvantage boys in father-absent households might be offset by traditional gender norms favoring boys' education. In other words, male preference might coexist with structural conditions favoring female education. For instance, there is evidence that Peruvian and Colombian parents generally supervise girls more than boys, and that this has more to do with gender norms than intended inputs to education (Cabrera et al. 2014; Soto Quiroga 2011). Lone mothers in non-extended households may also have more progressive gender norms than those who live in extended families, as their boys generally do not suffer more from father absence despite their households not having adult substitutes for boys' labor. Regardless of whether these conjunctures are true, it is clear that father absence does not disadvantage boys more than girls in on-time progression through school at ages 9-14 in Latin America and the Caribbean. Girls' advantage in on-time school progression in the region has other causes that warrant further investigation.

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Figure 1: Gender parity index for on-time progression by age

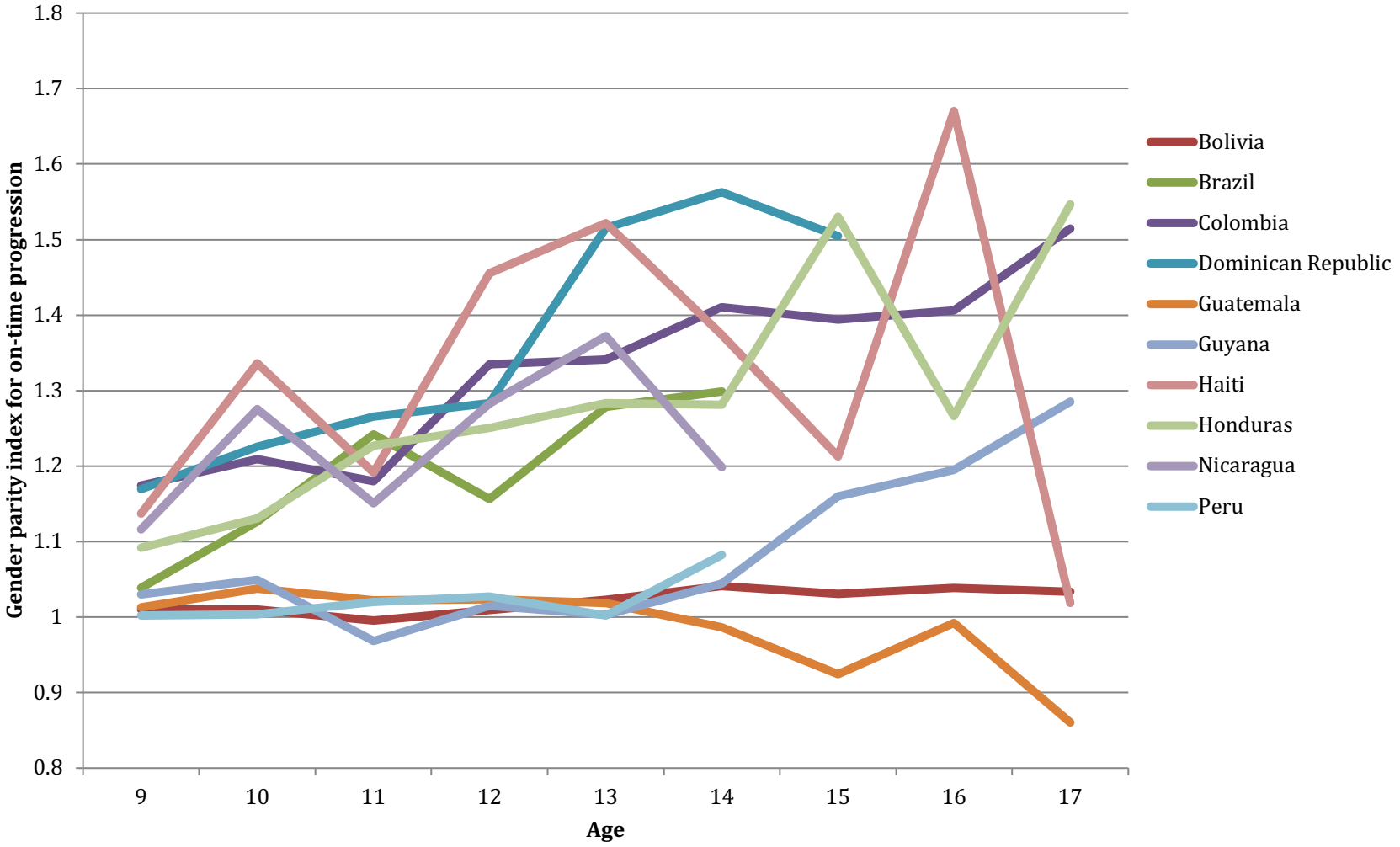

Figure 2: Gender parity index for on-time progression overall compared to subsamples where boys could be at higher risk

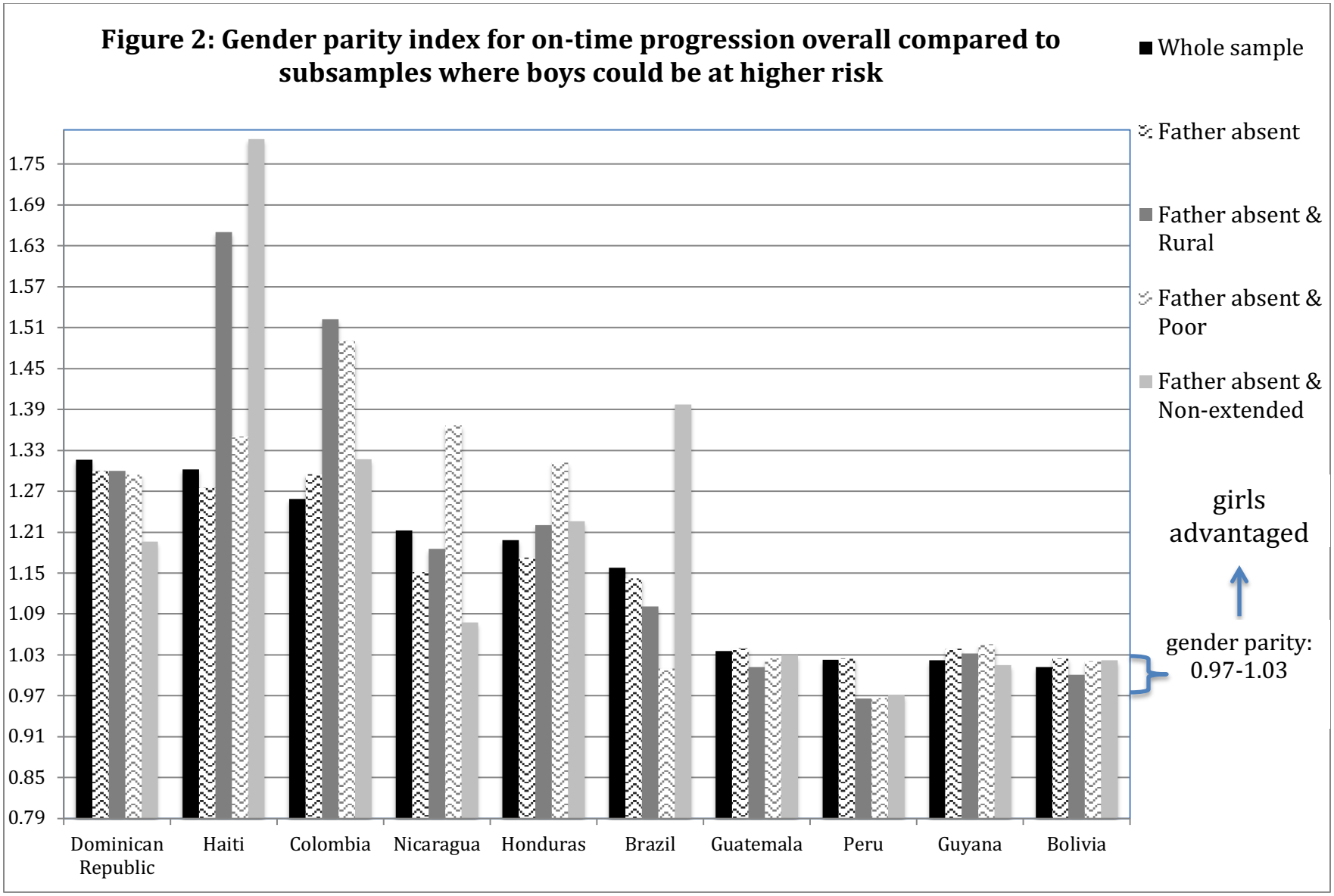

Table 1: Grade repetition rates

	Primary		Lower secondary	
Country and survey year	**Girls**	**Boys**	**Girls**	**Boys**
Dominican Republic 2013	4.5	6.9	3.4	5.5
Haiti 2012	not available		not available	
Colombia 2009-10	1.8	2.5	2.8	4.2
Nicaragua 2001	8.1	10.9	6.9	10.0
Honduras 2011-12	3.6	5.1	3.3	4.7
Brazil 1996	19.1		17.0	
Guatemala 2014-15	8.0	10.1	3.1	4.8
Peru 2012	3.8	4.8	4.3	7.2
Guyana 2009	0.7	0.9	9.3	14.9
Bolivia 2008	5.3	6.5	4.9	7.9

Note: Data from the World Bank Data Bank, Education Indicators. Most data from the same year as DHS survey; no data taken from more than two years before DHS survey.

Table 2: On-time progression among children aged 9-14, data from most recent Demographic and Health Surveys

Country and survey year	**Girls**	**Boys**	**Gender parity for on-time progression**	**Interpretation following United Nations criterion**
Dominican Republic 2013	68.1	51.8	1.31	Girls are advantaged
Haiti 2012	25.6	19.7	1.30	Girls are advantaged
Colombia 2009-10	47.3	37.6	1.26	Girls are advantaged
Nicaragua 2001	56.9	46.9	1.21	Girls are advantaged
Honduras 2011-12	49.4	41.2	1.20	Girls are advantaged
Brazil 1996	58.8	50.7	1.16	Girls are advantaged
Guatemala 2014-15	73.8	71.3	1.04	Girls are advantaged
Peru 2012	83.1	81.2	1.02	Gender parity in on-time progression
Guyana 2009	89.3	87.3	1.02	Gender parity in on-time progression
Bolivia 2008	82.5	81.5	1.01	Gender parity in on-time progression

Table 3: Distribution of children's living arrangements by country										
	Dominican Republic	Haiti	Colombia	Nicaragua	Honduras	Brazil	Guatemala	Peru	Guyana	Bolivia
Both biological parents in hh	2126	3679	13151	6003	8613	5458	9474	8274	1990	7958
	40%	42%	50%	58%	54%	67%	62%	65%	55%	65%
Father absent	2843	4491	11844	3979	6673	2460	5467	3965	1503	3571
	53%	51%	45%	38%	42%	30%	36%	31%	42%	29%
Mother absent	1510	2806	4766	1755	3059	1202	1603	1671	685	1903
	28%	32%	18%	17%	19%	15%	11%	13%	19%	16%
Neither biological parent in hh	1152	2158	3539	1371	2537	956	1288	1182	567	1249
	22%	24%	13%	13%	16%	12%	8%	9%	16%	10%
Total	5,327	8,818	26,222	10,366	15,808	8,164	15,256	12,728	3,611	12,183

Source: Most recent Demographic and Health Surveys (See Table 1 for survey years)

Table 4: Logistic regression results for on-time progression

	Whole sample: Model 1	Rural households: Model 2	Poor households: Model 3	Non-extended households: Model 4	Households with no adult male: Model 5
Dominican Republic					
Male child	-0.97 ***	-0.98 ***	-0.73 ***	-1.06 ***	-1.02 ***
Father absent	-0.19	-0.23	-0.22	-0.32	-0.28 *
Father absent*male	0.28 *	0.40	0.19	0.30	0.39 **
n	5,317	1,582	1,460	2,462	3,165
Haiti					
Male child	-0.50 ***	-0.53 ***	-0.42 ***	-0.55 ***	-0.52 ***
Father absent	-0.16	0.09	0.14	0.29	0.12
Father absent*male	0.16	-0.01	-0.07	-0.37	-0.14
n	8,758	5,786	6,345	3,292	5,039
Colombia					
Male child	-0.45 ***	-0.52 ***	-0.42 ***	-0.40 ***	-0.43 ***
Father absent	-0.15 **	-0.05	0.25	-0.07	-0.13 *
Father absent*male	-0.03	-0.15	-0.15	-0.16	0.00
n	26,149	9,341	2,862	11,054	14,816
Nicaragua					
Male child	-0.64 ***	-0.58 ***	-0.54 ***	-0.57 ***	-0.57 ***
Father absent	-0.09	-0.20	-0.04	-0.11	-0.12
Father absent*male	0.09	0.00	-0.19	0.02	0.18
n	10,311	5,438	3,997	4,107	5,417
Honduras					
Male child	-0.43 ***	-0.44 ***	-0.37 ***	-0.37 ***	-0.40 ***
Father absent	0.05	0.17 *	0.25 *	0.13	0.07
Father absent*male	0.09	0.04	-0.05	-0.04	0.09
n	15,491	10,301	4,128	5,951	8,064
Brazil					
Male child	-0.61 ***	-0.61 ***	-0.57 ***	-0.66 ***	-0.63 ***
Father absent	-0.36 ***	-0.27	-0.54 *	-0.23	-0.30 *
Father absent*male	0.12	0.07	0.38	-0.13	-0.02
n	8,125	2,024	2,281	4,363	5,365
Guatemala					
Male child	-0.05	-0.06	0.07	-0.10	-0.05
Father absent	0.25 ***	0.22 **	0.20	0.38 **	0.28 **
Father absent*male	-0.09	0.04	-0.14	-0.00	0.00
n	15,203	9,682	5,412	7,149	9,591
Peru					
Male child	-0.16 **	-0.07	-0.10	-0.23 **	-0.21 **

Father absent	-0.02	-0.13	-0.05	-0.22	-0.17
Father absent*male	0.01	0.10	0.14	0.25	0.28
n	12,720	5,761	5,179	6,913	8,410
Guyana					
Male child	-0.07	-0.18	-0.25	-0.17	-0.12
Father absent	0.02	-0.06	-0.35	-0.15	0.04
Father absent*male	-0.27	-0.06	0.02	0.05	-0.06
n	3,498	2,708	1,266	1,671	2,213
Bolivia					
Male child	-0.03	0.08	0.15	-0.02	-0.02
Father absent	0.07	0.19	0.35 *	0.39 *	0.26 *
Father absent*male	-0.04	-0.04	-0.23	-0.22	-0.04
n	12,148	5,821	3,121	7,553	9,021

Note: Models for every country include: urban residence, household wealth, adult male other than father in household, number of adults other than biological parents, whether other adults are over 65, parental education, mother present in household, number of other children in the household, focus child's age, and dummy variables representing geographic regions. Coefficients for control variables available upon request.

Appendix: Gender parity in on-time progression and father absence, by age