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Teenage Pregnancy and Opportunities in Latin America and the Caribbean

On Teenage Fertility Decisions, Poverty and Economic Achievement

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Teenage Pregnancy and Opportunities in Latin America and the Caribbean

On Teenage Fertility Decisions, Poverty and Economic Achievement

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This regional study involved the preparation of seven studies, four on the intra- and inter-generational consequences of adolescent motherhood (Azevedo et al., 2012; Kruger and Berthelon, 2012; Arceo-Gomez and Campos Vazquez, 2011, Arias and Lopez-Calva, 2012); two on policies to prevent teenage pregnancy (Lopez-Calva and Perova, 2012; Azevedo and Favara, 2012), and one large-scale quantitative-qualitative study on adolescent fertility in Ecuador.

One of the background papers for this report (Arceo and Gomez, 2012) has been presented at the annual meeting of the European Society for Population Economics European in Bern (ESPE 2012), held at the Universidad Autonóma de Nuevo León en Monterrey, Mexico. It also benefited from comments from the Social Development Secretariat of Mexico.

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Executive Summary

In the last decade, women have played a crucial role in the dramatic decline of poverty and inequality in Latin American and Caribbean countries. The increasing female participation in the labor market has generated large social benefits for the Latin America region and, in particular, has helped in mitigating the negative effect during the last crisis. Recently, *The World Bank Poverty and Labor Brief* (PLB, 2012) estimated that if female labor market participation had remained constant over the last decade, poverty reduction would have been 30 percent lower and the Gini inequality index 28 percent higher.

It suggests that increasing women's' opportunities is the way to go. **Expanding women's economic opportunities and reducing gender inequality is not only fair, but it is smart economics**. Indeed, it might generate a virtuous economic cycle in that economic growth eases the process of inclusion of women, and women's participation to economic development is instrumental for future poverty- and inequality-reduction goals.

In the last decade, **LAC region has been moving in the right direction and the region has experienced important gains in gender equality of endowments (assets) and economic opportunities**. Women's educational outcomes and health conditions have remarkably improved. In most LAC countries, girls have been achieving gender parity in primary school enrollment and even outperforming boys at the secondary and tertiary level. Increasing investments in human capital, together with the decline of fertility and the later age of marriage, have contributed to increased women's economic opportunities and in particular their participation in the labor market, as participation rates grew 15 percent from 2000 to 2010.

However, **there remain persistent barriers for women to expand their economic contribution, while significant gender gaps remains in terms of equity, assets and**

agency, defined as "the ability to make effective choices and to transform those choices into desired outcomes" (WDR, 2012).

While agency is difficult to measure, domestic violence and teenage pregnancy are often considered as manifestations of the lack of agency. Gender-based violence and teenage pregnancy tends to be high in the region, suggesting that women's ability to make her own choices and reach her goals may be low. In this report we highlight the role played by informal institutional barriers, such as gender roles and social norms, in constraining women opportunities and agency.[1]

Teen pregnancy and early childbearing remain a serious challenge in the region and might prevent women from taking full advantage of their human development assets and economic opportunities in the labor market and beyond.[2]

The present report reviews the factors associated with teenage pregnancy and early childbearing, and builds a framework to explore these issues systematically, towards the design of effective policy interventions in LAC. The main message of the Report is that **poverty and lack of opportunities are key determinants of early childbearing**. It emphasizes the relevance of strengthening agency and autonomy of women in their participation in markets, community and relationships, so that they can make effective choices and decide about the life plans they have reasons to value.

This regional study involved the preparation of seven studies: four on the intra- and intergenerational consequences of adolescent motherhood (Azevedo et al., 2012; Kruger and Berthelon, 2012; Arceo-Gomez and Campos Vazquez, 2011, and Arias and Lopez-Calva, 2012); two on policies to prevent teenage pregnancy (Lopez-Calva and Perova, 2012; Azevedo and Favara, 2012), and one large-scale quantitative-qualitative study on adolescent fertility in Ecuador.

1 The WDR 2012 identifies five expressions of agency for women, namely: control over resources, freedom of movement, decision-making power in the family, freedom from the risk of violence, and ability to have a voice in society and influence policy.
2 There is an important distinction between the two events: teenage pregnancy rate refers to the number of *pregnant women* per 1000 women aged 15-19; adolescent fertility rate is defined as the number of *births* per 1000 women in this age range.

Why we should care about teenage pregnancy?

Latin American and Caribbean countries have some of the highest teenage pregnancy rates in the world. In 2010, the LAC region had the third highest teenage fertility on the globe (72 births per 1000 women between 15 and 19 years of age), after Sub-Saharan Africa and South Asia (at 108 and 73 number of births, respectively). Indeed, most LAC countries fall within the top 50 countries with the highest adolescent fertility rate. Although the rates are declining worldwide, **Latin America's remarkably slow pace of decline compared to that of other regions is responsible for its gradual ascent towards the top of the adolescent fertility charts** (see Figure A).[3]

Significant differences exist within the region. Nicaragua, the Dominican Republic and Guatemala had the highest adolescent fertility rate in 2010 in LAC, with more than 100 births per 1000 women between ages 15 and 19. On the other hand, Peru, Haiti and Trinidad and Tobago had the lowest, with less than 50 births per 1000 women in the same age range.

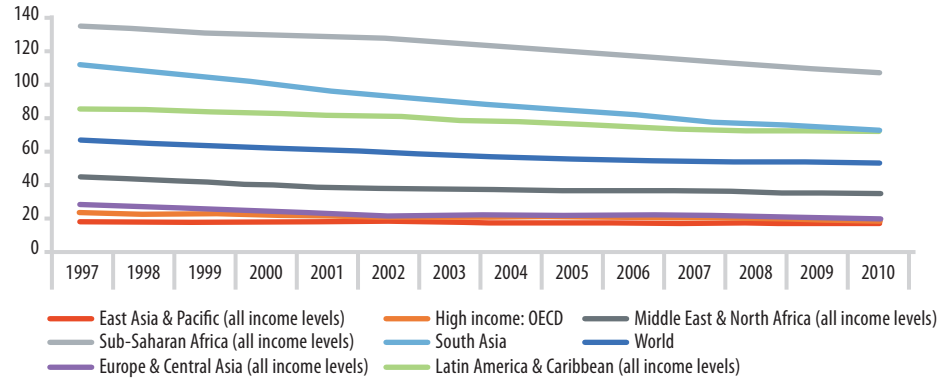
Teenage childbearing has progressively become a major policy concern, as **different studies have established a significant correlation between early motherhood, lower educational achievement, and poorer labor market outcomes for women**. Indeed, females seem to bear the short- and long-term implications of early childbearing disproportionately.

In comparison with countries of similar characteristics, the adolescent fertility rate found in LAC countries is higher than expected, even when accounting for different socioeconomic characteristics. The only exception refers to inequality. The results indicate that inequality indicators, including inequality of opportunities, contribute to better explain LAC's higher-than-expected adolescent fertility rate. It has been argued that the combination of being poor and marginalized in an unequal society limits the perceived likelihood of future economic success, in favor of short-term satisfaction such as becoming pregnant at a young age (Kearney and Levine, 2011).

This Report assumes the principle that **fertility decisions should be the result of choice, rather than defined by constraints**.[4] Policies should enable teenagers to

3 The annualized rate of decline between 1997 and 2010 was 1.25% in LAC—the lowest after East Asia and the Pacific region. Indeed, the adolescent fertility rate curve in LAC is almost flat over time.
4 It is true, as the classic economic model has established that all the decisions are constrained, and there is no such thing as "unconstrained decision making." By defining fertility decisions as the result of choice and not constraints, we refer to the concept of positive freedom in Berlin (1959) and "effective freedom" in Sen (1998).

FIGURE A. ADOLESCENT FERTILITY RATE BY WORLD REGIONS (1997-2010)



make informed fertility choices and widen the options from which they can affectively choose. Relaxing constraints may align individual decision with desirable social outcomes to the degree that teenage pregnancy is both a consequence and a cause of these constraints.

The present Report thus investigates the factors that influence fertility decisions in general, as well as the relationship of fertility decisions to poverty, employment conditions and social context. While the epidemiological approach utilized does not seek to establish causality, it does identify a set of risk-factors that policies can potentially influence.

Life circumstances such as poverty, low school quality, growing up in a single parent household, being born to a teen mother or having a sister who became pregnant as an adolescent, place girls at a higher risk. Distinguishing whether poor outcomes for teenage mothers seen later in life are the continuation of a lower economic trajectory, or whether early motherhood is their cause is complex. There are several methodologies to disentangle the potential effects of teenage pregnancy and childbearing from the other confounding factors (i.e. those factors that put teen mothers at the risk of early pregnancy). The present study exploits these methodologies in order to estimate the effect of adolescent motherhood on maternal educational performance and labor market participation, as reviewed below.

A teen pregnancy in the household also has potential long-term effects on the child, the partner who fathered him, the parents of the mother, and the siblings of the pregnant woman. These results have individual and social relevance for welfare

and productivity. The last sections of this Report evaluate the economic costs of teen pregnancy for individuals, households and society, and provide a review of some of the main policy experience in implementing interventions to prevent teenage pregnancy and support teenage mothers.

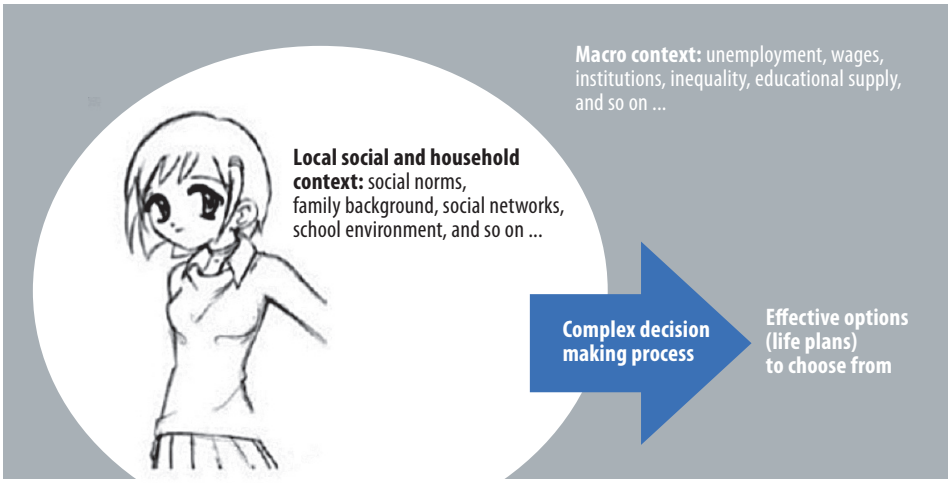
Teenage pregnancy is relevant from a development-policy perspective because early childbearing may have important intra- and inter-generational implications that could trigger intergenerational poverty traps. Teenage mothers are more vulnerable and typically lack private assets and human resources to cope with the new challenge. Even when teenage pregnancy is considered an event to be prevented due to the negative consequences it (might) involve and for the related social costs, some caution is needed given the complexity of the phenomenon. This report starts from the stylized fact that adolescent pregnancy is more likely to occur in a socioeconomic deprived context and avoids adopting a normative approach with respect to pregnancy *per se*. The main aim is to draw a comprehensive picture of adolescent fertility choice in LAC, proposing a review of the risk factors and consequences of teenage pregnancy with the final objective of designing effective policies.

Risk Factors

Three intertwined elements are highlighted throughout the report in the decision-making process of teenage girls. These are: (i) The **rationality** element involved in fertility decisions; (ii) The **behavioral issues** that restrict a strictly rational setting (including discounting, informational constraints, and self control), and (iii) The **social interactions and norms** (peer effects, social stigma, for example) that also affect the outcomes. This decision process is also affected by the macro context, the local social setting, and the household environment, defining the effective options available for teenage girls to determine their life plans (see Figure B).

The notion *agency* plays a fundamental role. Agency is the capacity women have to establish goals, pursue them and decide among life plans they have reason to value. Women may get pregnant due to a lack of agency—by following existing norms, due to peer pressure, or by having low bargaining power in their relationship and being thus unable to have their partners agree on the use of contraceptives. But in some contexts, getting pregnant may also be a way for poor young women to acquire control over their lives and obtain the respect of their community/family, proving childbearing to be a channel to achieve (in some contexts the only option of) social mobility.

FIGURE B. ADOLESCENT FERTILITY: A COMPLEX DECISION-MAKING PROCESS



Using data from the United Nations Population Division and World Development Indicators, the study analyzes the macro-level risk factors associated with the phenomenon.[5] The results indicate that **adolescent fertility in Latin American countries correlates positively with poverty, inequality**, public health expenditure, female labor force participation rate, and the share of women in wage employment. Conversely, adolescent fertility correlates negatively with the share of rural population and unemployment. The findings must be interpreted with caution given reverse causality problems, as many of the confounding risk factors might be endogenous. Rather than making causal inferences, the attempt is to display significant associations between the adolescent fertility rate and the main characteristics that correlate with the phenomenon.

At the micro level, the study uses DHS data for several countries (Bolivia, 2008; Colombia, 2010; Dominican Republic, 2007; Haiti, 2006; Honduras, 2006; and Peru, 2008) and a linear probability model regression to present estimates of the probability of becoming a teenage mother. The findings suggest that **adolescents who have more education, live in urban areas and come from wealthier families have a lower probability of getting pregnant**. Pregnant teenagers are more vulnerable and poorer than comparable adolescents who do not have children. For instance, in Mexico, pregnant

5 The study uses a pooled sample of cross-country and time-series observations spanning the period 1990 to 2010 (130 countries; 26 of those from LAC). The United Nations Population Division provided data on the adolescent birth rate; all other data is from the WDI.

teenagers are more likely to be indigenous and to come from less wealthy families, while in Peru, the incidence of teenage motherhood is smaller in the wealthier quarter of the population than at lower levels of wealth distribution. Teenagers who do not live in the same household as their fathers are also more likely to become pregnant.

The data shows **a trend of earlier sexual activity along with an increase in the average age at first marriage—weakening the usual link of marriage with sexual activity**. Vital statistics from Brazil, Mexico and Colombia further underscore the link with civil status, finding that maternal age at childbirth is generally increasing. The results suggest that marriage has deterrent effects on the age of mother. In other words, **being married is positively correlated with maternal age (delaying pregnancy)**.

Evidence from both developed and developing countries reveals a **negative association between education and total fertility**. The opportunity cost of childbearing is higher for more educated women, while poor quality education might lead adolescents to believe that education cannot change their future, adjusting thus their aspirations and expectations towards short-term targets. Estimates using DHS data in 2005 for Bolivia, Colombia, the Dominican Republic, Haiti and Peru, find that the fertility rate jumps in the years of education where certificates are issued (i.e., completed primary and secondary education). This suggests either that adolescents *plan* to get pregnant (after obtaining their primary or secondary education diploma) or that staying in school reduces the risk of getting pregnant.

The sexual behavior and fertility choices of adolescents are affected through different mechanisms. Scarce family resources and poor within-family relationships might limit adolescent opportunities by reducing the relative cost of getting pregnant. Children from deprived backgrounds are more likely to have lower aspirations for their future and the attainment of salient goals. Related to aspirations, and their role in decision-making, is the notion of agency. Indeed, fertility choice is widely recognized as an expression of agency, where early sexual initiation and teen childbearing are correlated with its absence.

While many indirect measures to proxy agency exist, developing a comprehensive indicator of agency to assess a causal relation with the observed outcome is complex. Most cases consider one single dimension of agency, such as contraceptive use, at a time. According to the 2005 DHS data for different cohorts of women in Bolivia, Colombia, Dominican Republic, Haiti and Peru mentioned above, **younger women use fewer contraceptive methods**. Although knowledge and rationality are two key factors in the decision to have protected sexual relations, **self-confidence plays an important role too,**

given that contraceptive use requires negotiation with the partner. Previous studies find that prior low self-confidence is predictive of subsequent reports of a range of risky behaviors and has thus been conceptualized as a potential protective factor.

The DHS data for Bolivia, Colombia, the Dominican Republic, Haiti, Honduras and Peru indicates that teenagers using *traditional* contraceptive methods have a lower probability than those who do not use any contraceptives, in all countries.[6] However, the use of modern contraceptive methods positively correlates with the probability of getting pregnant in three (Colombia, the Dominican Republic, Honduras) of the six countries. Different explanations might exist for the positive correlation. Knowing about a method does not necessarily ensure its proper use, which could increase the likelihood of pregnancy for those newly sexually active. It might also be the case that those using these contraceptive methods have a more intense sexual activity and thus a higher risk of becoming pregnant. **The use of condoms in the first sexual intercourse *does* relate negatively to the probability of getting pregnant**. This suggests that sexual education and access to contraceptive methods is crucial to prevent motherhood among the youngest.

On the consequences of early childbearing

The literature indicates that early childbearing can affect various dimensions of the mother's economic opportunities, such as education, earnings, labor participation and her prospects on the marriage market.[7] In addition, a teen pregnancy in the household might have potential long-term effects on the child, the partner who fathered it, the parents of the mother (through an income shock and reduction in consumption if the woman and child remain in their household), and the siblings of the pregnant woman due to natural competition for fixed resources within the household.

This section provides new evidence on the consequences of teenage pregnancy found in LAC.

In particular we focused on the consequences for the mother and the child, and the potential impact on gender inequality. As highlighted in the economic literature on teen

6 Modern methods include female and male sterilization, oral and intrauterine contraceptives, and condoms, among others; traditional methods include periodic and withdrawal. Further details found in the Report.

7 General LAC evidence suggests that in most cases teenage pregnancy correlates negatively with each of these socioeconomic outcomes. For example, Buvinic (1998) uses data from Chile, Barbados, Guatemala and Mexico to show that adolescent mothers are more likely to live in poverty.

motherhood, being a mother as an adolescent is an "endogenous" event, more likely to occur in deprived socio-economic contexts. **Teen mothers differ along a number of important unobserved dimensions from women who delay childbearing**. This has serious implication on identifying the casual effect of early childbearing. The evidence of the effect of teenage motherhood can be capturing correlations instead of casual relations. **This is the reason why studies on the consequences of teenage motherhood are often unable to ascertain causality**. Indeed, part of the negative outcomes attributed to teenage pregnancy might be due to the absence of opportunities and the poor educational and economic opportunities that teen mother are facing.

We provide robust evidence on the **negative effect of teenage motherhood on maternal outcomes and sizeable effects on the child**. These results are robust **even when controlling for unobservable confounding factors**. As expected, the magnitude of the effect of teenage pregnancy on the outcomes considered is lower than when considering simply correlation, given that the methodological approach used allow us to recover the effect of teenage motherhood "net" of any other confounding factors.

The results found and the caveats and limits of the analysis performed are further discussed below. However, it is worth pointing out that beside the potential cost of early motherhood for the adolescent mother, evidence from other studies suggests that early motherhood might disturb the household equilibrium with negative externalities on the well-being of the other household members.

Furthermore, this report provides **evidence, when the mother is a teenager, of a higher risk of maternal mortality, fetal death, infant mortality and suicide**. Teen mothers are also more likely to live in a single-headed household, to divorce, or to have poorer opportunities in the marriage market. Moreover, the cost related to the potential psychological consequences of being pregnant during the adolescence or the risk of serious complications from unsafe abortions are not counted, as this Report focuses on the cost of teen motherhood, and not of teen pregnancy.

Finally, given data limitations, it is possible only in some cases to establish the effects on mobility and poverty traps that this type of shock has on household welfare, in addition to the long-term impact on the young mothers themselves.

In this sense, beyond the methodological issues highlighted regarding correlations versus causal relations, **there is sufficient evidence to consider teen motherhood as a costly and risky event for the mother and the child**.

It is worth highlighting that most of the analysis in this Report has focused on the individual cost of early motherhood and does not account for the public cost. However, as noted by Azevedo et al. (2012), Mexican women **who gave birth during adolescence are more likely to participate in social programs and depend on social assistance income**. This suggests that even in the best scenario in which teenage childbearing does not generate an individual cost for the actors involved, **it does represent a cost for society**, indicating that policy design to align individual decision with desirable social outcomes is desirable.

Fiscal costs related to early childbearing include health-related ones, both in prevention and health care provision for young mothers and their children, as well as costs related to education, including foregone returns from investment in girls and boys who abandon school. Additional costs include those of specific programs that aim to reduce the incidence of the phenomenon and mitigate its impact.

A. CONSEQUENCES FOR THE MOTHER

As noted, failure to account for systematic differences in unobservable characteristics between teen mothers and those teens that do not bear children might lead to overestimation of their effect or a misunderstanding of the true issues behind the development of the mother in poverty. Some of the methodologies that control confounding factors include the standard OLS and natural experiment (often using miscarriages) approach; propensity-score-matching; and within-family fixed effects— the latter which compare teen mothers with sisters (or in some cases cousins) who timed their births at different stages. The present study estimates the effect of adolescent motherhood on maternal educational performance and labor market participation, using these three methodological approaches.

Using the 2006 round of the Mexican Survey of Demographic Dynamics (ENADID), Azevedo et al. (2012) identify the impact of childbearing among teenagers who become pregnant using miscarriages as a natural experiment (estimating the cost of early childbearing *conditional* on being pregnant). The study does not find negative consequences in specific economic indicators, such as employment and education, for the mothers who as teenagers bear a child, conditional on the fact that they were already in the risk group. Women who gave birth during adolescence, however, are more likely to participate in social programs and depend on social assistance income.

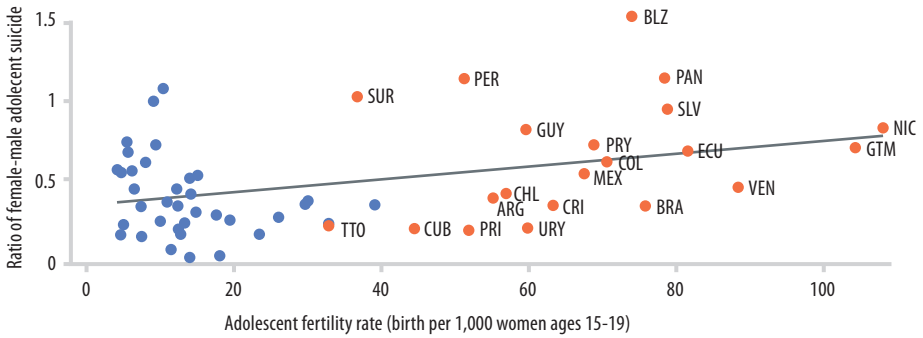
Additional evidence from Mexico suggests that becoming pregnant during adolescence has negative effects on the opportunities of the mother. Arceo-Gomez and

Campos Vazquez (2011) find that **teenage pregnancy decreases years of schooling, lowers school attendance and reduces work hours**. Contrary to the previous analysis estimating the cost of early childbearing conditional on being pregnant, this study uses a propensity score matching technique to estimate the cost of adolescent childbearing by comparing teen mothers to adolescents who delayed childbearing. In addition to the negative effect on education and labor outcomes, Arceo-Gomez and Campos Vazquez find significant **negative effects on the market opportunities for marriage of teen mothers**.

Kruger and Berthelon (2012) use nine rounds of Chilean household surveys (1990 -2009) to analyze adolescent fertility as a determinant of high school dropout. They estimate propensity score matching and fixed-family effects for a large sub-sample of sisters to control for selection bias and unobservable characteristics at the household and municipality levels. Their findings indicate that **teenage motherhood significantly reduces the probability of high school completion**. Once they control for unobservable characteristics at the household level, however, the negative consequences of teen childbearing are reduced substantially.

These three studies suggest that controlling for selection bias is crucial in producing an accurate portrait of the consequences of teenage pregnancy. The results are in line with previous evidence from developed countries indicating that when the model used is controlling effectively for confounding factors, the negative effects attributed to teenage motherhood reduces significantly. In addition to differences in the methodological approach, the contrasting results from the three studies may be explained

FIGURE C. FEMALE-MALE ADOLESCENT SUICIDE RATIO CONDITIONAL ON ADOLESCENT FERTILITY RATE IN LAC AND OECD, 2005



Source: PAHO, 2005.

by differences in characteristics across the three samples of adolescents.[8] The exercises also highlight the fact that **ascertaining casual relations between teenage motherhood and future outcomes is sensitive to methodological issues**.

On the other hand, among the limitations of these analyses lies the fact that—as in the case of other similar studies—**they estimate the cost of early childbearing vis-à-vis the cost of teen pregnancy**. Abortion is illegal in most LAC countries, and the lack of abortion data prevents its analysis. In the region, unsafe abortion practices are widespread, especially for young mothers. Second, the studies do not consider that **teenage pregnancy is associated with a higher risk of maternal mortality, fetal death, infant mortality and suicide** (Figure C). Third, except for Kruger and Berthelon (2012), the studies do not explicitly take into account the fact that teen motherhood may be a source of inequity. Teenage motherhood is not only more likely to occur among the poorest but also its effects are more likely to be negative and stronger among this group, as individuals have fewer resources to cope with the new challenge and to recover from the shock. Early childbearing may also have important negative intergenerational effects and/or negative consequences on the other household members.

B. INTERGENERATIONAL LINKS AND CONSEQUENCES FOR OTHER HOUSEHOLD MEMBERS

Previous research reveals important negative intergenerational effects of teenage motherhood. Studies focus either on the effects of childbearing on maternal investments in human capital or on the consequences of teenage childbearing on the development of the child. In terms of the latter, existing studies analyze the effect of being born to a teenage mother on a variety of outcomes, such as low cognitive test scores, behavioral outcomes, grade repetition and economic disadvantage. The past evidence reviewed on the Report suggests significant effects on the behavior of children but no effect on academic outcomes at later stages in life.

Within the framework of this Report, Arias and Lopez-Calva (2012) investigate the impact of teenage pregnancy on child outcomes using the three waves of the Young Lives (YLs) project for the Peruvian sample. The study analyzes anthropometric outcomes as well as child performance in terms of cognitive skills, for both the young cohort and the older cohorts of children. They use pooled OLS estimation and add time and

8 For example, the adolescents in the sample used by Azevedo et al. (2012) are on average (i) older; (ii) more likely to live in rural areas; (iii) have less education (despite being older); (iv) are less likely to be single; (v) are less likely to be currently employed, and (vi) have lower labor income (than the sample used in Kruger and Berthelon, 2012).

regional fixed effect. Their results suggest that the negative effect of early childbearing on child nutritional status is reversible. **Children born to teen mothers appear worse off in the first year of their life but they catch up relatively quickly**, so that any differences to children born to older mothers disappears by age five. On the other hand, **these children face a higher risk of presenting risky behaviors/behavioral problems when they become adolescents**.

Teen childbearing is also likely to impact the living arrangement of the nuclear household. Evidence from the United States suggests that teen childbearing will probably affect the marital prospects of the woman negatively. Within this Report, Arceo-Gomez and Campos-Vazquez (2011) find that in the short run, Mexican **teenagers who become pregnant have higher marriage rates than those who do not**. However, while in the long run these teenagers have a higher probability of being married, they also present a higher probability of being separated or divorced. Their results contrast with those of Buvinic (1998), which finds little evidence of negative consequences of early childbearing on the marriage prospects of the mother in Barbados, Chile, Guatemala and Mexico.

Given that in many cases the teen mothers live in the parental house after the birth of the child, both the parents and siblings are likely to be affected. For example, the household's wealth may decrease, with potential consequences on the sibling's development, particularly if they are of schooling age. The time allocation of both parents and siblings may also change through the substitution of child care for previously free or working hours. The study by Arceo-Gomez and Campos-Vazquez (2011) is one of the few papers investigating the consequences of early childbearing on parents for LAC. However, the authors do not find evidence of an effect of teenage pregnancy on the outcomes of other household members, such as the work hours of the parents or the income per capita of the household.

C. SOURCES OF INEQUITY AND COPING STRATEGIES

From an equity perspective, two potential sources of inequity relate to teenage pregnancy. The first refers to the gender-related source of inequity, with evidence suggesting that the mother suffers disproportionately the burden of early childbearing. The second potential source relates to the socioeconomic background of the teen mother. **The long-term burden and the available options as coping strategies are unequally distributed within the group of girls who face teenage pregnancy**. These conditions depend on the specific circumstances of different groups.

Regarding the latter potential source of inequity, it is quite plausible that the impact of early childbearing will vary depending on the characteristics of the mothers as well as on the setting where they give birth. Azevedo et al. (2012) find evidence of the heterogeneity of the effects of teenage childbearing on the labor market outcomes in Mexico along three dimensions: age at birth, ethnicity and wealth. They find that an increase in the asset index by one standard deviation raises the probability of employment by 16 percentage points. The easier access to jobs for the adolescent mothers from wealthier families might indicate a better social network and a job-searching process with stronger parental support. They also find that the likelihood of employment is lower among indigenous adolescent mothers, probably due to the group's stronger association with poverty.

Interestingly, the impact of adolescent childbearing on labor income evolves in the opposite direction. The earnings of adolescent mothers are lower among women with higher asset indices, and higher among women who gave birth at the age of 16 and younger. The findings might result from the support received. Wealthier families may be able to help their daughters financially, alleviating the pressure to drop out of school and find a job. Similarly, younger mothers might be more likely to remain in their parents' home with the potential of free childcare.

Policy Options

Evidence shows that, even after controlling for the initial lack of economic opportunities of teen mothers, early childbearing potentially decreases their future educational achievements and labor market opportunities. Early childbearing might also have important effects on the intergenerational transmission of poverty by placing the children of teen mothers at a higher risk of behavioral problems and risky behaviors. There is also evidence towards a correlation between teen childbearing, maternal mortality and suicide rates, especially among the youngest. Furthermore, teenage mothers are more likely to rely on social assistance, which implies a public cost for society. The potential individual cost for the mother, the child and the other actors involved, as well as the public cost of teenage childbearing, call for an enhanced policy design, one which takes into account the complexity of the phenomenon.

At the macro level, the evidence indicates that the **reduction of inequality and the creation of more opportunities for women can reduce teenage pregnancy and ameliorate the effects of early childbearing**. Policies and programs that reduce poverty and gender inequalities are critical. At the micro level, the policy objective should

be to **widen the set of options for women, as well as their capacity to be in effective control over their lives**—enhancing agency—so that fertility decisions are made on the basis of life plans they have reasons to value and teenage pregnancy is not the only option at hand or an unintended consequence of behavioral inconsistencies.

The last section of the Report provides a non-exhaustive summary of the main policy experience in implementing interventions to prevent teenage pregnancy and support teenage mothers. It also includes new evidence on the effect of conditional cash transfer (CCTs) and extended-hours programs in reducing teenage pregnancy.

Most interventions to prevent teen pregnancy in the past have focused on improving the quality of education and health services. They have sought to provide youth-friendly reproductive health services and enhance the sexual and reproductive-health knowledge of teenage girls and boys. **Recent programs, alternatively, aim to raise the opportunity cost of pregnancy by helping teens remain in school and/or by increasing their access to employment**. The Report reviews different policy interventions implemented in Latin America and other developing regions, for which impact evaluations are available. The policy interventions found are classified around six categories: school-based programs; peer education; contraceptive use; extended school hours programs; CCTs, and youth training programs.

The Report then examines the **channels through which different interventions have reduced the likelihood of teen pregnancy** to improve the design of effective policies. The main potential channels identified refer to (i) opportunities and endowments/assets, and (ii) agency. The analysis presented throughout this Report has been divided into risk factors and consequences. Risk factors can be addressed through policy interventions that focus on increasing education, health, and employment prospects in communities. **These interventions can affect fertility choices by increasing the *opportunities* and *assets* of teenage girls**. In addition to the indirect effect that these interventions can also **have on increased aspirations and self-confidence**, interventions such as information and access to contraceptives, and peer programs can have a direct impact on fertility choices **through increased *agency***. In this sense—while the division between agency, and assets and opportunities, is helpful for illustrative process—it is understood that most interventions are not purely one or the other, and that there is often a (desirable) virtuous feedback within them.

On the consequence side, different support has been provided to teen mothers, including psychological support and counseling, as well as childcare, educational scholarships and other programs that seek to improve the future economic opportunities

for vulnerable mothers. The following table shows an example of the framework used to review the different policy interventions:

FIGURE D. MAPPING THE AVAILABLE POLICY OPTIONS

	ASSETS/OPPORTUNITIES	AGENCY
RISK FACTORS	CCTs, Youth Training, Extended School-Hours	Peer education, school-based, contraceptive use
CONSEQUENCES	Childcare Programs, Educational Scholarships, Flexible School-Hours	Counseling, mentoring, and psychological support

For instance, **CCTs affect teenage pregnancy through different mechanisms**. CCT programs increase educational enrollment due to the conditionality that the family has to comply with in order to receive the transfer. More challenging is to understand why attending school reduces the probability of adolescent pregnancies. The potential channel suggested refers to the change in opportunities and aspirations. Plausibly, the mechanism responsible for the observed reduction in fertility through higher school participation might be an increase of the perceived opportunities. If this is the case, the opportunity costs of pregnancy might be higher and might convince teens to disengage from risky behaviors. Increased levels of education may also strengthen self-confidence and impact the capacity to aspire, increasing the agency of teen girls. Alternatively, school attendance might decrease teen pregnancy by changing the time allocation of adolescents and thus reduce the amount of time available for sexual activity. Through the regular health-checks requirement, CCT programs may also indirectly increase the contraceptive knowledge for the entire family.

The Report reviews the evidence from four different CCT programs in Latin America: *Familias en Accion* and *Subsidio Educativo* in Colombia, *Juntos* in Peru, and *Bolsa Familia* in Brazil. The evidence suggests that a positive effect might be triggered by increased school attendance. According to Cortes et al. (2011), the effect of educational CCT programs depends on the definition of conditionality. Indeed, they find that both *Subsidio Educativo* and *Familias en Accion* are effective in increasing school enrollment. However, only *Subsidio Educativo* reduces teenage pregnancy. Their study suggests that after controlling for other factors, the imposition of a performance requirement is the key to the *Subsidio Educativo* program, providing students with enough incentives to reduce teenage childbearing.

Similarly, Lopez-Calva and Perova (2012) indicate **that school attendance is one of the plausible mechanisms responsible for the observed decrease in fertility among the *Juntos* beneficiaries**. They find that the *Juntos* program indeed increases average school attendance in the district. However, it is not clear which are the channels through which the increased school attendance reduces teenage pregnancy. Azevedo and Favara (2012) explore the association between receiving the *Bolsa Familia* benefit and teen fertility. Their preliminary results suggest that ***Bolsa Familia* is negatively associated to teen childbearing during the period considered**, particular among younger teenagers.

In the case of extended school-hours programs, **Berthelon and Kruger (2011) find that longer hours in school reduced teen motherhood in Chile**. Their paper analyzed the effect of a nation-wide education reform that extended the school day, increasing the amount of time students spent in school by almost 22 percent. Since they analyze the reform's short-run impact, any effect is likely arising from the fact that students spend a greater number of hours per day under adult supervision, limiting the possibility to engage in risky sexual behavior that can result in pregnancy. The results of the study reveal important time-allocation change effects of the longer school day. Teens living in municipalities with greater access to full-day high schools had a lower probability of becoming mothers. The reform accounts for approximately one third of the reduction in adolescent motherhood in Chile.

These results hold important messages and policy implications. Among them, the study finds evidence of important social returns on the reform through the reduction of adolescent motherhood, which should improve the future economic opportunities of Chilean youth. Additionally, the strongest impacts occurred among poor urban young women, improving the economic outlook for underprivileged teenagers. In the long run, this may contribute to reduce inequities in the labor market opportunities for high- versus low-income young women.

The evidence discussed in the Report illustrates the many risk factors and mechanisms related to teen pregnancy. The complexity of teenage fertility decisions suggests that **a multi-sectoral approach might be more effective than single interventions in reducing the adolescent fertility rate and helping mitigate the adverse consequences of teenage pregnancy**. The need for a multi-sectoral approach originates from the nature of the fertility decision. As noted, the risk factors are closely intertwined and strategic investments must be made to curb the multiple vulnerabilities that place girls at risk of unintended pregnancies. Moreover, the prevalence of teen mothers among the poorest encourages policymaking to address difficult social

problems; in particular, to widen the set of opportunities for those who view having a child as their only path of social mobility.

In terms of the intergenerational links, the welfare consequences of teenage pregnancy can be ameliorated if the socioeconomic conditions of children born from teenage mothers are improved. **There is little evidence in the LAC region of centralized programs that help teenage mothers, and in most cases ex-post evaluations have not been carried out**. Most support (counseling centers, mentoring, psychological support, childcare, and flexible school-hours programs) occurs at the local level through the efforts of community organizations, women's associations, and NGOs. Some exceptions stand out, for instance Mexico's Scholarship Program to Support Basic Education for Young Mothers and Pregnant Youth (*Promajoven*). Given the very high correlation between early child bearing and poverty, and the fact that the effects of teenage pregnancy on children can be reversed, interventions that target households of teenage mothers and carry out interventions to improve the conditions in which children are raised—for instance through nutritional and educational programs—can be useful.

Introduction

In the fall of 2011, a wave of TV crews and newspaper reporters surprised the people of Toppensih, Washington. The media onslaught was seeking out Gaby Rodriguez, a Hispanic high school senior who made national headlines as the girl who faked her own pregnancy for a senior project. The 17-year-old Gaby announced her pregnancy and then analyzed the reactions of all she encountered over the next six months. A few key allies—including her mother, who designed her "extended belly," and the school principal—remained silent in support of her experiment.[9]

The *pregnancy project* sought to expose the existence, and challenge the validity, of stereotypes about Hispanic women. The charade explored the underlying motivations of the many who responded with a wide range of reactions. The author explains, "If you are to understand my story, I first need to tell you about my family and where I grew up." Teenage pregnancy elicits diverse responses that require understanding a complex combination of circumstances, social conditions and background.

Many people expressed no surprise that Gaby was pregnant. She was the daughter of a teenage mom of Hispanic origin who had worked as a low-paid mechanic even while pregnant. Gaby had grown up in an environment where early child bearing was only natural. But not everybody shared this view. Gaby herself burst into tears when her science teacher, who considered her an excellent student with a vital future, expressed disappointment over her seemingly lost opportunities for a better life. The honest tears, she tells the readers, only added realism to the scene.

In some way, understanding the social dynamics and the diversity of reactions that her innovative scheme generated is at the core of the chapters that follow. The present report acknowledges first the complexity of the conditions associated with teenage pregnancy

9 The complete story is told in Rodriguez, G., with J. Glatzer, *The pregnancy project: a memoir*. New York, NY: Simon & Schuster Books For Young Readers, (2012).

and early childbearing. It then attempts to build a framework that explores these issues in a systematic way in order to create the elements necessary to design effective policy interventions.

The specific objectives of this regional study are:

i) To establish a thorough description of the magnitude of the issue and its potential implications for social advancement;
ii) To advance the understanding of the risk factors, motivations and impacts at the household level--as a determinant of poverty and a cause of intra- and inter-generational poverty traps;
iii) To illuminate the coping mechanisms and their individual and social implications;
iv) To highlight the gender-related issues that have historically provoked asymmetric costs to boys and girls, and
v) To provide elements that support specific policies on this matter.

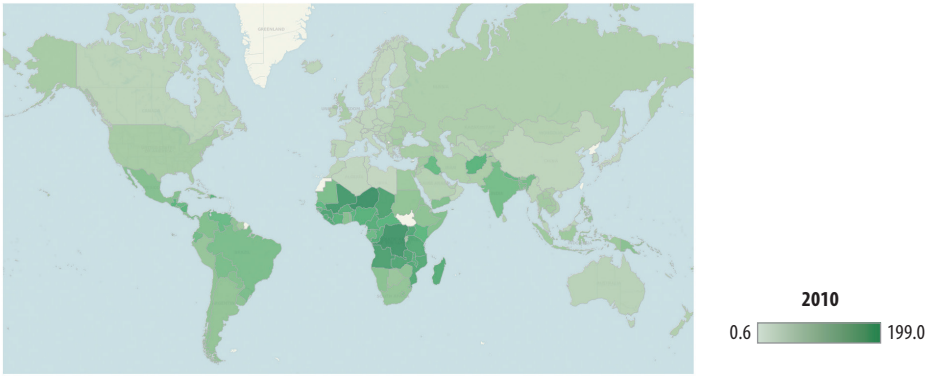
The regional study achieves these objectives through the following sections:

(i) Section 1 presents stylized facts on teen pregnancy with special attention to the historical trends and profiles from both LAC and the rest of the world. It also offers a systematic framework to study adolescent fertility choices and a discussion on related methodological issues.
(ii) Section 2 investigates the factors that influence fertility decisions in general, as well as their relationship to poverty, employment conditions and social context. The crux of the analysis is an epidemiological risk-factors approach. While this analysis does not seek to establish causality, it does identify a set of risk factors that policies can potentially influence. From an epidemiological framework, the crucial intent is to identify the combination of circumstances that induce a higher likelihood of the event rather than the magnitude of marginal effects.
(iii) Section 3 evaluates the current economic costs of teen pregnancy for individuals, households and society in terms of lost income, employment and educational achievement. Given data limitations, it is possible only in some cases to establish the effects on mobility and poverty traps that this type of shock has on household welfare (the parents and siblings of teenage pregnant women), partners and children, in addition to the long-term impact on the young mothers themselves.
(iv) Section 4 provides a non-exhaustive summary of the main policy experience in implementing interventions to prevent teenage pregnancy and support teenage mothers. It includes new evidence on the effect of CCT and extended-hours programs in reducing teenage pregnancy.

1. Why we should care about teenage pregnancy?

Latin American and Caribbean countries have some of the highest teenage pregnancy rates in the world (Figure 1). Though over the last two decades the region has made significant gains in reducing poverty and inequality, with clear improvements in health and education outcomes, teen pregnancy and early childbearing remain a serious challenge. As an example, Chile and Brazil, countries that achieved impressive gains in a number of health indicators —including maternal and child mortality, and chronic malnutrition—obtained a much more limited success in stemming teen pregnancy.

FIGURE 1. ADOLESCENT FERTILITY RATE IN 2010
(BIRTHS PER 1,000 WOMEN, AGE 15-19)



Source: WDI 2010, authors' calculation.

At the global level, UNICEF estimated that by the turn of the century around 16 million children were born of teen moms per year; and 60 percent of them were declared as being unintended pregnancies (Cherry, et al. 2001).[10] Teenage childbearing has become a

10 As discussed throughout the report, the "intended" versus "unintended" nature of pregnancies is useful for the analysis as a phenomenon related to the existence of effective options for women, though specific estimates of the "unintended" share are highly debatable.

major policy concern after many studies established a significant correlation between early motherhood, lower educational achievement and poorer labor-market outcomes for women. These results have both individual and social relevance for welfare and productivity. In addition, females seem to bear disproportionately the short- and long-term costs of early childbearing.

Early pregnancies raise relevant policy questions about the associated risk factors, particularly given that the data reports a non-negligible share of the teenage pregnancies as intended. Why would adolescents plan to have a baby? Intuition suggests that one valid approach—perhaps a fundamental one—is to widen the set of social and economic opportunities in order to influence the relative cost of childbearing at an early age.

Some life circumstances that place girls at higher risk are: (i) poverty, (ii) poor school quality, (iii) growing up in a single parent household, (iv) being born to a teen mother, or (v) having a sister who became pregnant as an adolescent. Are poor outcomes for teenage mothers seen later in life the continuation of a lower economic trajectory relative to teens who do not bear children, or is early motherhood their cause?

Adolescent pregnancy is thus a symptom of a complex condition. Attempts to disentangle the potential effects of teenage pregnancy and childbearing from the other confounding factors (i.e. those factors that put teen mothers at risk of early pregnancy) can lead to a "Which came first?" dilemma. Given the dimension and the potential consequences of the teenage pregnancy phenomenon, solving this dilemma is very relevant from a policy point of view.

This report assumes the perspective that fertility decisions should be the result of choice, rather than defined by constraints.[11] Policies should enable teenagers to make informed fertility choices and widen the options from which they can affectively choose. Relaxing constraints may align individual decision with desirable social outcomes to the degree that teenage pregnancy is both a consequence and a cause of these constraints. Finally, policies should provide teen mothers with the instruments to carry out these decisions and pursue life plans they have reason to value.

Teenage pregnancy is relevant from a development-policy perspective because early childbearing may have important intra- and inter-generational implications that could trigger intergenerational poverty traps. Stakeholders need an accurate understanding of

11 It is true, as the classic economic model has established, that all the decisions are constrained, and there is no such thing as "unconstrained decision making." By defining fertility decisions as the result of choice and not constraints, we refer to the concept of positive freedom in Berlin (1959) and "effective freedom" in Sen (1998).

its impact and cost estimates. Its prevention is crucial, especially when the pregnancy is unintended or it occurs in situations of deprivation, which increase its probability. Teenage mothers are more vulnerable and typically lack private assets and human resources to cope with the new challenge. Prevention is especially critical in those countries where the welfare state is either absent or does not provide adequate support during the pregnancy and after childbirth.

Governments have devoted considerable public resources to direct and indirect interventions aimed at reducing the incidence of early childbearing. Taking stock of what we have learned about their effectiveness is also vital because this issue has become politically salient. The Minister of Education in Mexico recently presented data (October 12th, 2010) that showed that around 8 percent of girls enrolled in Mexican public high schools claimed to have had a pregnancy while the average incidence is about 11-12 percent. This reveals a high incidence for a group with education levels well above the national average. Romulo Paes de Souza, former Executive Secretary of the Brazilian Ministry of Planning, recently told *The Economist* that Brazil grapples with a "new poverty" no longer related to hunger but rather to family disintegration, teenage pregnancy, drug use, violence and environmental degradation.

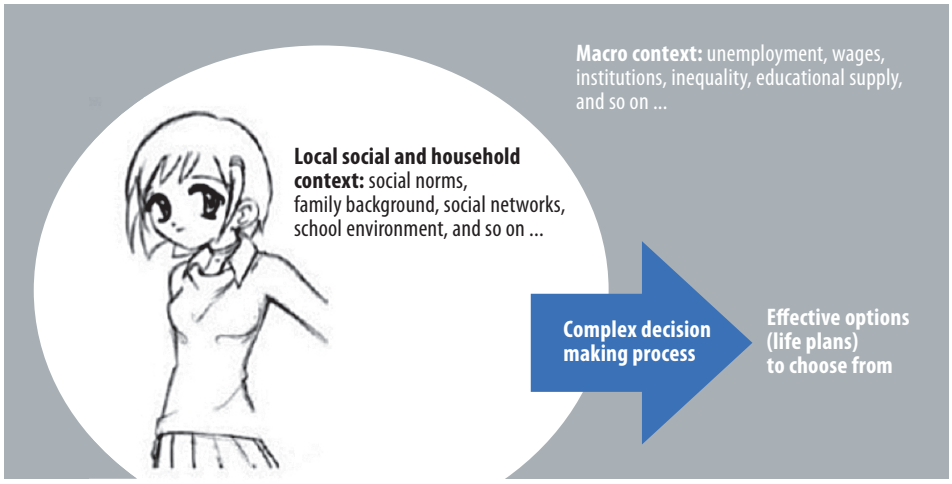
A relevant question is thus the following: What would be the welfare benefit for the potential teenage mom, her partner, the child, and her siblings and parents, if the decision to get pregnant were delayed? Such a question is difficult to answer, but it is that which motivates the analysis that follows.

Even if teenage pregnancy is considered an event to be prevented due to the negative consequences it (might) involve and for related social costs, some caution is needed given the complexity of the phenomenon. This report starts from the stylized fact that adolescent pregnancy is more likely to occur in a socioeconomic deprived context and avoids adopting a normative approach with respect to pregnancy *per se*. The main aim is to draw a comprehensive picture of adolescent fertility choice in LAC, proposing a review of the risk factors and consequences of teenage pregnancy with the final objective of designing effective policies. There is no normative position in terms of when women should have children. There is a normative position, however, in terms of the fact that such a decision should be made within a set of several life-plan options, among which delaying pregnancy constitutes a real, effectively available, choice. If having a child at 16 is the only option for a girl seeking to acquire respect in her community and/or to gain control over her life, or if it is the result of a lack of information or an unintended consequence of unprotected sex, there is a concern. Not because of the fact that the pregnancy took place at that age, but rather because it is a manifestation of a lack of options, deficiency in education, the reflection of low empowerment in a relationship, and/or the exclusion from key information and social services.

Throughout the Report, three elements will be highlighted in the decision-making process of teenage girls.[12] These are: (i) The rationality element involved in fertility decisions; (ii) The behavioral issues that restrict a strictly rational setting (discounting, informational constraints, self control…), and (iii) Those social interactions and norms (peer effects, stigma, and so on) that also affect the outcomes. These three elements are intertwined in the decision process and will affect the outcomes to be described below. Such decision processes, involving the aspects just mentioned above, will be affected by the macro context, the local social setting and the household environment, thus defining the effective options available for teenage girls to define their life plans (Figure 2).

A final consideration to be taken into account is the distinction between teenage pregnancy and early childbearing, as many scenarios may emerge between one event and the other (see Figure 3). The teenage pregnancy rate is defined as the number of pregnant women per 1000 women aged 15-19; while the adolescent fertility rate is defined as the number of births per 1000 women aged 15-19. In this report, teen childbearing is the main observable outcome of teenage pregnancy. Coping mechanisms can lead to different paths. In Section 3, where we look at the consequences of fertility choices, we solely take into account the pregnancies that end up in births. However, the analysis of the risk factors presented in Section 2 refers, in a broader sense, to the probability of becoming pregnant, regardless of the pregnancy's outcome.

FIGURE 2. ADOLESCENT FERTILITY: A COMPLEX DECISION-MAKING PROCESS



12 The framework is explained in more detail in the next chapter.

FIGURE 3. TEENAGE PREGNANCY EVENT TREE

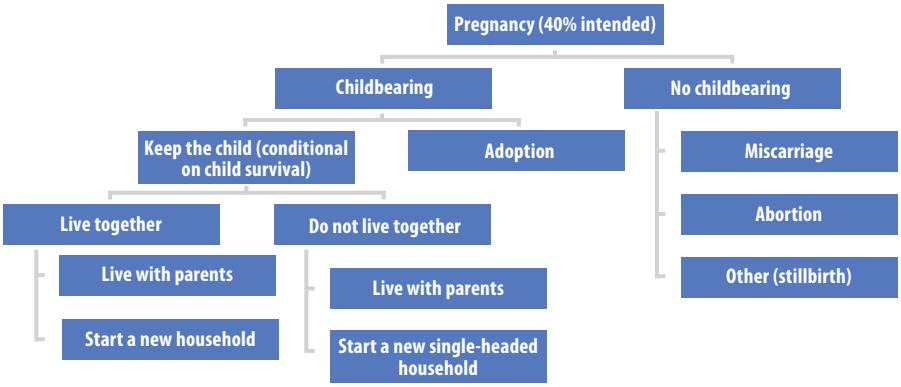
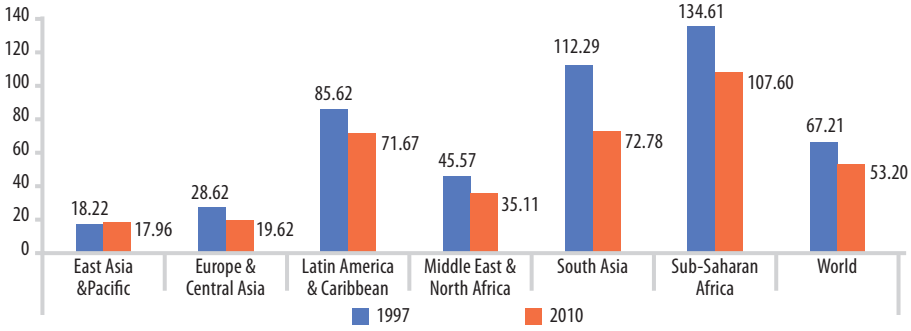


FIGURE 4. ADOLESCENT FERTILITY RATE IN 1997 AND 2010 BY REGIONS (BIRTHS PER 1,000 WOMEN, AGE 15-19)



Source: WDI 2007, 2010, authors' calculation.

1.1 ADOLESCENT FERTILITY RATE IN LAC

In 2010, the LAC region had the third highest teenage fertility in the world after Sub-Saharan Africa and South Asia (Table 1). According to the 2010 World Development Indicators (WDI), the number of births per 1,000 women in LAC between the ages of 15 and 19 ranged from 86 at the end of the 1990s to 72 in 2010, when the lowest adolescent fertility rate (18 ‰) occurred in the East Asia and Pacific and in the Europe and Central Asia regions (20 ‰) (Figure 4).

TABLE 1. LEVEL AND ANNUALIZED RATE OF CHANGE OF ADOLESCENT FERTILITY BY REGION (BIRTHS PER 1,000 WOMEN, AGE 15-19)

	1997	2010	Annualized rate (%)
East Asia & Pacific	18.22	17.96	-0.11
Europe & Central Asia	28.62	19.62	-2.42
Latin America & Caribbean	85.62	71.67	-1.25
Middle East & North Africa	45.57	35.11	-1.77
South Asia	112.29	72.78	-2.71
Sub-Saharan Africa	134.61	107.60	-1.54
World	67.21	53.20	-1.60

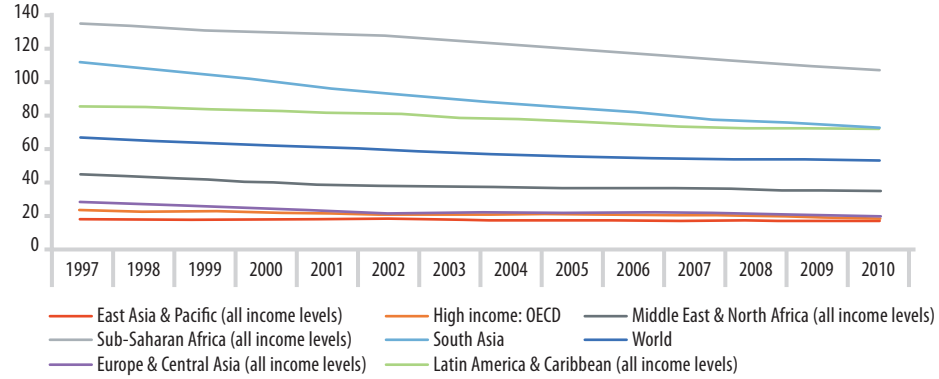
Source: WDI 1997-2010. All income levels used in each region.

The WDI 2010 reports that the first 20 countries with the highest fertility rate are Sub-Saharan countries. Among the top 40 countries, eight are from LAC (Nicaragua, Dominican Republic, Guatemala, Honduras, Venezuela, Ecuador, El Salvador and Panama). Most LAC countries fall within the top 50 countries with the highest adolescent fertility rate, as the two Western countries with the highest adolescent fertility rate, the United States and United Kingdom rank only at 106th and 111th (with an adolescent fertility rate of 36‰ and 30‰, respectively).

While teenage pregnancy has declined worldwide in the last decade, it is declining in LAC at a slower pace than in other regions. As reported in Table 1, the annualized rate of change in the period 1997-2010 is -1.25% in LAC, the lowest after the East Asia and Pacific region. Indeed, the adolescent fertility rate curve in LAC is almost flat over time. Such a slow pace of decline (compared to other regions) is responsible for the gradual ascent of Latin America to the top of the adolescent fertility charts. South Asia (SAS), which held the second highest adolescent fertility rate in 2010, is declining at an impressive annual rate of -2.71%. If the trends continue, LAC would achieve the highest pregnancy rate for all non-African regions (Figure 5).

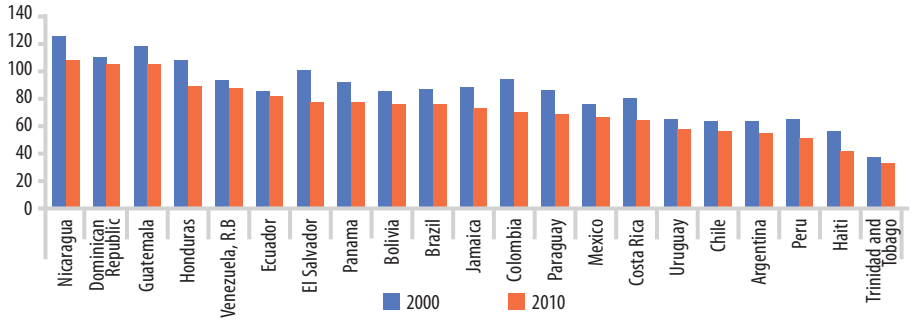
Within the LAC region, Nicaragua, Dominican Republic and Guatemala had the highest adolescent fertility rate in 2010, with over 100 births per 1000 women between ages 15 and 19 (Figure 6).

FIGURE 5. ADOLESCENT FERTILITY RATE BY WORLD REGIONS (1997-2010)



Source: WDI 2010, authors' calculation.

FIGURE 6. ADOLESCENT FERTILITY RATE WITHIN THE LAC REGION (IN 2000 AND 2010)



Source: WDI 2000, 2010, authors' calculation.

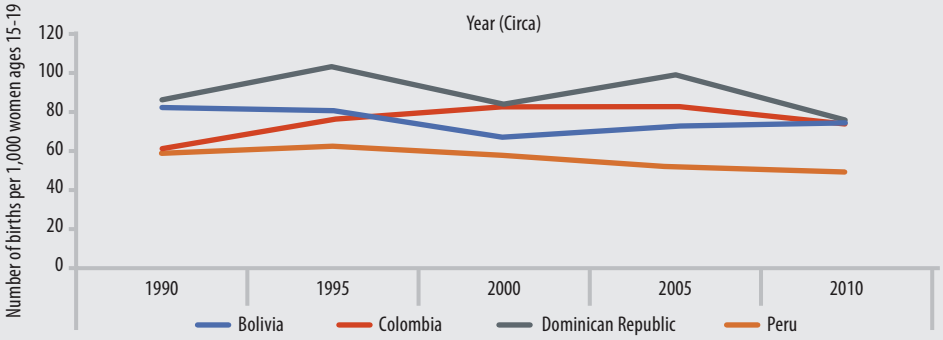
In all LAC countries, the adolescent fertility rate has declined between 2000 and 2010. However the decreases differed substantially from one country to the next. Markedly, the four countries with the highest adolescent fertility rate (Nicaragua, Dominican Republic, Guatemala and Honduras) reported the same in 2000 and in 2010. The five most successful in reducing the adolescent fertility rates were Colombia (-25%), Haiti (-23%), Costa Rica, El Salvador and Peru (-21%). The lowest declines were registered in the Dominican Republic (-4%; the country with the second highest rate in LAC[13]), Ecuador, and Venezuela.

13 For the annual adolescent fertility rate data see http://data.worldbank.org/indicator/SP.ADO.TFRT. A complete table--including the adolescent fertility rate in 2000 and 2009 in each LAC country and the absolute and relative change during this period—is reported in Table A1 in the Appendix.

BOX 1. EVIDENCE OF ADOLESCENT FERTILITY RATE TRENDS FROM DEMOGRAPHIC AND HEALTH SURVEYS (DHS)

According to the WDI data, the adolescent fertility rate decreased over time in all LAC countries between 1997 and 2009. The inversion of this trend starts at the end of the 1990s. Unfortunately, the WDI does not present data before 1997. A study of the DHS data from 59 countries in surveys conducted between 1990 and 2002, however, indicates that some LAC countries (Brazil, Colombia, and the Dominican Republic) experienced increases in teenage pregnancy, probably due to increase in the proportion of sexually active adolescents. The tendency starts to revert at the end of the observed period, so that in 2002 most of the LAC countries end up with lower adolescent fertility.

FIGURE 7. ADOLESCENT FERTILITY RATE (1990-2010)



Source: SEDLAC and The World Bank.

From the DHS for the four countries in which data for a longer period is available (circa 1990 to circa 2010), Figure 7 shows a decrease in the teenage fertility rate for all countries except Colombia. Only Peru, however, shows a distinctly decreasing trend. Over a recent five-year period (2005-2010), Colombia, the Dominican Republic and Peru show a decrease in the rate, while Bolivia shows an increase. Table 2 displays the adolescent fertility rate over time by age group. In all countries except Peru, the increase in teenage pregnancy in younger women (15 years old) over the last 20 years is worrisome. Flórez and Núñez (2001) raise the problem of a different pattern across age groups. They observe that even as the total fertility rates for the region declined in the mid-1990s, teenage fertility did not change at the same pace. Therefore in some countries " … it has stayed practically constant, while in others it has declined, though less than fertility among older women. In other countries, fertility may have increased." [14]

14 Flórez and Núñez (2001). Page 8.

TABLE 2. ADOLESCENT FERTILITY RATE OVER TIME AND BY AGE GROUP

	Year	Age				
	(Circa)	15	16	17	18	19
Bolivia	1990	3.57	42.96	53.51	119.04	200.05
	1995	15.54	30.54	67.35	116.59	204.65
	2000	23.09	12.85	73.86	110.58	138.12
	2005	23.23	36.86	69.29	110.10	147.73
	2010	23.27	50.78	75.66	95.99	131.81
Colombia	1990	11.07	49.53	56.37	69.16	128.98
	1995	28.05	54.41	56.10	113.83	146.42
	2000	9.71	47.61	85.95	134.79	123.43
	2005	18.77	47.66	87.90	117.91	148.14
	2010	21.29	42.70	77.73	107.14	124.46
Dominican Republic	1990	20.56	45.62	57.87	172.18	128.49
	1995	22.58	67.55	121.82	121.42	177.95
	2000	46.15	47.64	98.36	128.37	123.83
	2005	25.18	74.26	113.14	139.19	143.55
	2010	29.61	50.21	75.34	105.32	131.02
Peru	1990	7.20	27.38	46.66	85.14	134.22
	1995	12.76	33.07	59.39	84.56	132.60
	2000	8.92	34.73	58.22	98.91	96.22
	2005	4.53	27.10	54.29	77.31	100.48
	2010	7.82	25.98	75.28	91.59	60.92

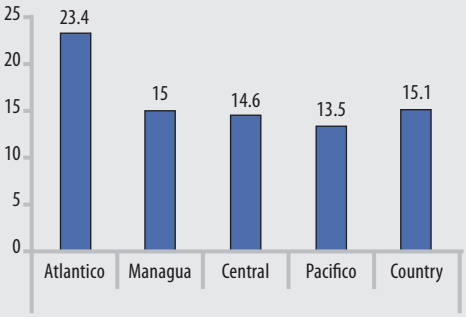
Source: DHS, author´s calculations.

BOX 2. ADOLESCENT FERTILITY RATE IN NICARAGUA: EVIDENCE FROM THE NICARAGUA POVERTY ASSESSMENT STUDY

The 2008 Nicaragua Poverty Assessment study[15] reported that roughly a quarter (24.9%) of women aged 15-19 either had a child (21.3%) or became pregnant (3.6%). In other words, one out of every four in this age group has become a mother or might soon. When restricting the sample to women between 15 and 17 years of age, already fifteen percent (15%) have had one or more child. Compared with the WDI, the Nicaragua Poverty Assessment study reports significantly higher adolescent fertility rates. According to the WDI, the adolescent fertility rate in Nicaragua was about 10% and 11% in 2008 and 2009, respectively.

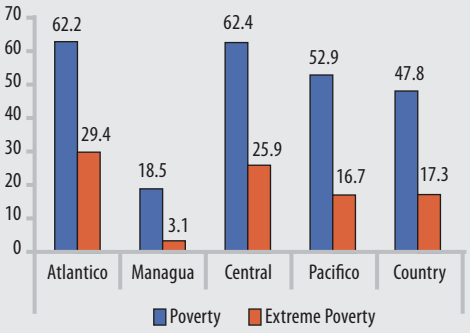
The Nicaragua Poverty Assessment study reports different adolescent fertility rates across regions. As shown in the graph below, Atlantico is the region with the highest percentages of teenagers giving birth (23.4%) while Pacifico (13.5%) presents the lowest one (Figure 8). Atlantico also bears the highest incidence of extreme poverty, suggesting a correlation between the two events (Figure 9).

FIGURE 8. ADOLESCENT FERTILITY RATE (15-19 YEARS OLD), 2008



Source: INEC, Encuesta de Medición del Nivel de Vida, 1998. Poverty line: C$ 4,259 GDP per capital; Extreme Poverty line: C$ 2,246 GDP per capita, authors' calculation.

FIGURE 9. ADOLESCENT FERTILITY RATE BY REGION (AGE 15-19, %)



Source: SEDLAC and The World Bank.

15 INEC, Encuesta de Medición del Nivel de Vida, 1998.

BOX 3. ADOLESCENT FERTILITY RATE IN ECUADOR:
WORRISOME EVIDENCE WITHIN THE YOUNGEST COHORT

According to the last 2010 Census in Ecuador, about one percent (1%) of the girls aged between 10 and 14 bore a child in 2010. This indicates that about 2,080 out of the total 346,700 females of ages 10 to 14 years in 2010 had already experienced motherhood. The teenage fertility rate for the youngest segment of the adolescent population has been increasing over the last 10 years. The total prevalence of the 2010 adolescent fertility rate in Ecuador amounted to 17.2%.

This worrisome situation has captured the attention of both the government and civil society. The Ministry of Health, Education and Economic and Social Inclusion (MIES) joined the Social Sector Coordinating Ministry and the Secretariat for Immigration Affairs to establish the *Estrategia Nacional Intersectorial de Planificación Familiar y Prevención del Embarazo en Adolescentes* (ENIPLA). Its purpose is to address this concern on several fronts, such as family planning, sexual education, and increased access to information.

1.1.1 The role of inequality in poverty and adolescent fertility in LAC

The positive correlation between poverty and the incidence of adolescent fertility rates is quite clear from the available data. In Figure 10, a series of scatter plots shows the bivariate correlation between adolescent fertility rates and multiple correlated variables. In all plots, each point corresponds to a country in a particular year. Regions are color-coded. The number of points in each plot fluctuates because some variables are only available for a selection of countries and a selection of years. The scatter plots present linear predictions on the relationship between adolescent fertility and several socioeconomic characteristics, including (i) poverty, (ii) inequality, (iii) labor market characteristics, and (iv) the women's participation, education, demographic indicators and health expenditures.

This analysis used a pooled sample of cross-country and time-series observations spanning the period 2000 to 2010 (130 countries; 26 of those from LAC). The United Nations Population Division provided data on the adolescent birth rate (defined as annual births per 1000 women aged 15 to 19).[16] All other data is from the WDI. The selection of variables

16 United Nations, Department of Economic and Social Affairs, Population Division (2011). 2011 Update for the MDG Database: Adolescent Birth Rate (POP/DB/Fert/A/MDG2011).

is based on two criteria: (i) their relevance to the issue of adolescent fertility, and (ii) the availability of data for the period of interest.

Panel A in the figure below shows the adolescent fertility rate in all regions by GDP per capita. As expected, a negative correlation exists between GDP per capita and the adolescent fertility rate. However some peculiarities emerge when looking at the LAC region. First, there is a large gap in the adolescent fertility rate among the richest and the poorest. Second, the adolescent fertility rate is relatively higher in LAC than in other regions comparable in term of GDP per capita, when comparing along the GDP per capita distribution. This last peculiarity persists even when using alternative indicators for poverty, such as the poverty headcount ratio (see Figure A2, Panel A and B in the Appendix). This suggests that poor socioeconomic conditions do not explain by themselves the high adolescent fertility rate in LAC. Other factors and circumstances play a role in increasing the incidence of teenage pregnancy in LAC more than in other comparable countries.

The relatively higher adolescent fertility rate could be due simply to a higher fertility rate of the Latin American population compared to other regions. When conditioning the adolescent fertility rate on the total fertility rate, however, the adolescent fertility rate in LAC is higher than the average expected rate (Figure 10, Panel H).

Other differences between LAC and the other regions—such as those on rates of GDP growth (Figure 10, Panel B), unemployment (Figure 10, Panel E), female labor participation (Figure 10, Panel F), percent of primary school completion (Figure 10, Panel G) and public health expenditure as a share of GDP (Figure 10, Panel I)—cannot explain why the adolescent fertility rate in LAC is higher than the average expected level.

The main finding is that LAC countries place above the regression line in nearly all of the scatter plots, indicating that the adolescent fertility rate is higher than that of countries with similar characteristics. These data show the complexity of the issue and the peculiarity of the LAC region. None of the socioeconomic characteristics explored can explain on their own why the adolescent fertility rate is higher in LAC than in other regions.

One notable exception to the above-stated generalization has emerged. When conditioning on inequality indicators, LAC countries mostly cluster around the regression line. This holds true both when considering inequality as measured by the Gini index, or as the income of the poorest 10 percent relative to the richest 10 percent (Panel C and Panel D of Figure 10, respectively).

Can inequality and, especially, inequality of opportunity explain why the adolescent fertility rate is higher in LAC than in other "comparable" regions? Apparently it does. Condition-

ing on the Gini index, the model explains better part of the LAC's (previously "unexplained") gap in adolescent fertility rate. Indeed, the observed adolescent fertility rate distribution better matches the expected distribution once it is conditioned on inequality.

The three countries with the highest adolescent fertility rates in LAC in 2010 (Nicaragua, Guatemala and Honduras) are notably present among the highest inequality levels in the region, according to the Gini coefficient measured by SEDLAC (Table 3) in 2010. Given that inequality is a distinctive and pervasive characteristic of the region, these findings are

TABLE 3. ADOLESCENT FERTILITY RATE, POVERTY AND INEQUALITY

Country	Adolescence fertility rate[1]	GDP per capita[2]	Poverty[3]	Gini coefficient[4]	Period
Argentina	55.27	15,854	6.6	44.3	2010-I
Bolivia	76.12	4,593	33.5	57.2	2007
Brazil	75.81	11,239	15.1	53.7	2009
Chile	56.89	15,002	4.3	51.9	2009
Colombia	70.61	9,566	17.0	57.9	2007
Costa Rica	63.42	11,216	8.1	50.2	2009
Dominican Republic	105.65	8,836	16.4	48.9	2009
Ecuador	81.45	7,776	19.4	48.9	2009
El Salvador	78.77	7,430	21.1	46.6	2008
Guatemala	104.31	4,885	33.9	54.4	2006
Haiti	43.31	1,165	78.8	59.2	2001
Honduras	88.76	4,417	39.4	55.3	2009
Jamaica	72.76	8,727	43.1	59.9	2002
Mexico	67.54	14,430	14.0	50.5	2008
Nicaragua	107.99	3,045	42.7	52.3	2005
Panama	78.57	12,578	12.3	52.0	2009
Paraguay	68.95	5,202	20.6	50.7	2009
Peru	51.12	9,330	20.0	49.1	2009
Uruguay	59.86	14,296	3.4	44.7	2008
Venezuela	88.36	11,829	19.8	43.5	2006

(1) The adolescent fertility rate is defined as the number of births per 1000 women aged 15-19. Source: WDI, 2010. (2) 2010 Gross domestic product based on purchasing-power-parity (PPP) per capita GDP (Current international dollar). Source: International Monetary Fund, World Economic Outlook Database, April 2011. (3) Headcount ratio (USD 2.5 poverty line).
Source: SEDLAC (CEDLAS and The World Bank). (4) Gini coefficient for the distribution of household per capita income. Source: SEDLAC (CEDLAS and The World Bank)

quite interesting when examining disparities of income, consumption levels, and access to education, basic services and other socioeconomic variables.

Kearney and Levine (2011) demonstrate that the variation in income inequality across U.S. states explains a sizable share of the geographic variation in teen childbearing. They argue that the combination of being poor and being marginalized in an unequal society "contributes to a low perception of possible economic success and hence leads to choices that favor short-term satisfaction, in this case, the decision to have a baby when young and unmarried."

As shown in the scatter plot, the gap between the adolescent fertility rates in LAC with respect to other "comparable" regions remains partially unexplained. Given the interactions between the different socioeconomic characteristics under consideration, a multivariate analysis provides noteworthy clues to the peculiarities, i.e. the correlates, of teenage fertility in LAC.

FIGURE 10. ADOLESCENT FERTILITY RATE AND SOCIOECONOMIC CHARACTERISTICS (2000-2010)

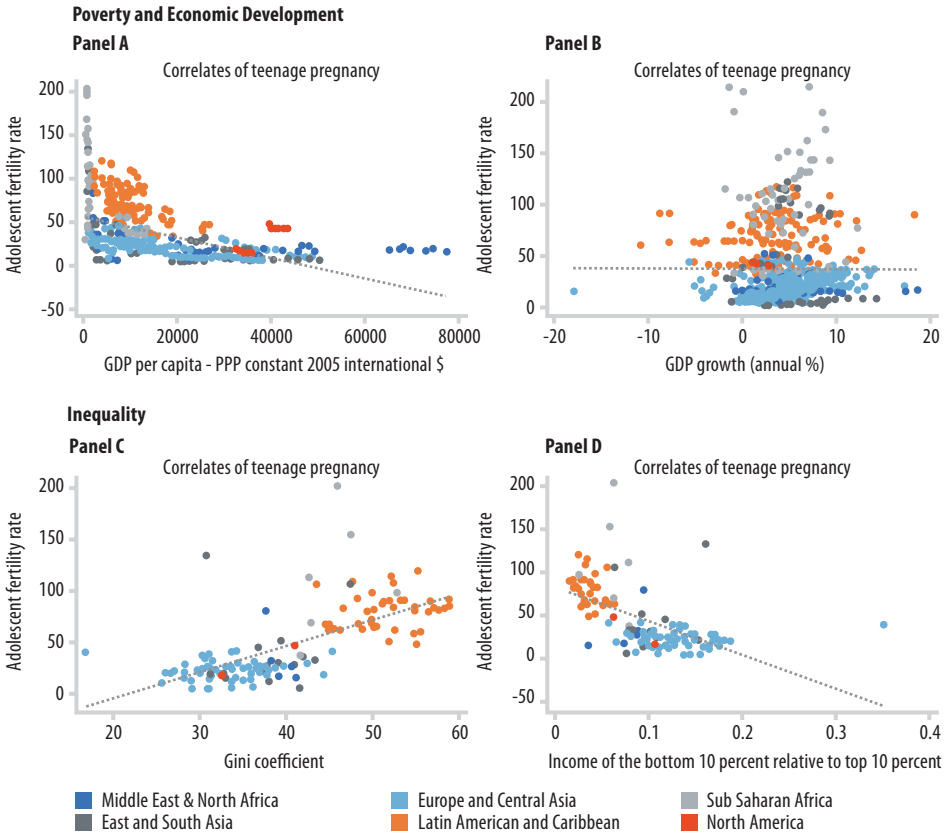
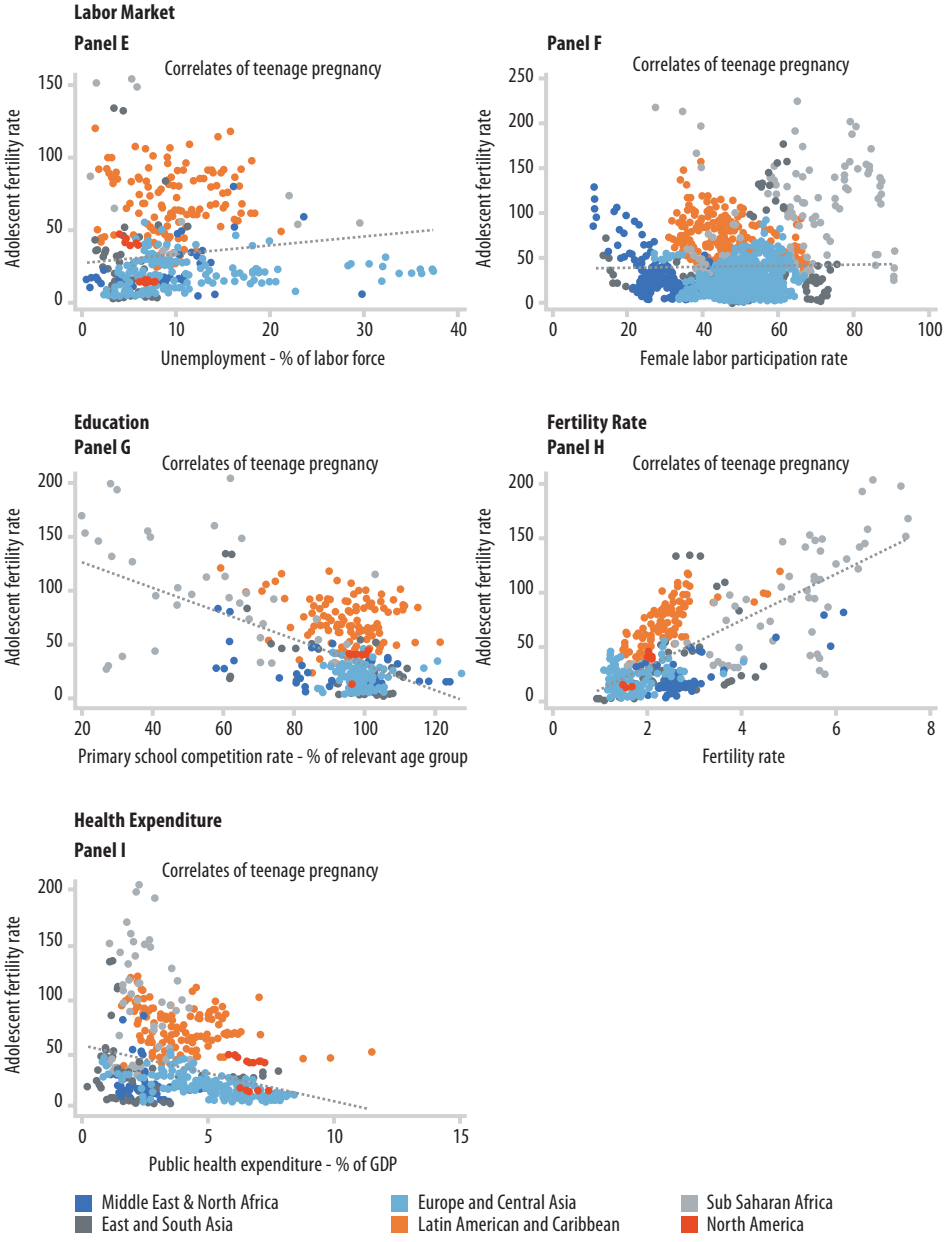


FIGURE 10. ADOLESCENT FERTILITY RATE AND SOCIOECONOMIC CHARACTERISTICS (2000-2010) - (CONT.)



Source: WDI 2009, authors' calculation.

1.2 TEENAGE PREGNANCY AND CHILDBEARING: A COMPLEX PHENOMENON TO STUDY

As has been explained, teenage pregnancy is a complex phenomenon:

(i) It involves both individual and collective dimensions that have distinctions difficult to discern.
(ii) Although it might involve elements of rationality, it is influenced by objective and subjective constraints related to context.
(iii) The decision or events leading to pregnancy present dynamic elements for which it is difficult to account.

All of these elements combine to make its study a methodological challenge. The following potential issues affect most empirical work, particularly investigations into the consequences of teenage pregnancy and childbearing.

1.2.1 Methodological issues

An additional challenge for the study of teenage pregnancy is the poor quality or lack of available data that is worse in developing countries. The sample size is often small, which in some cases makes the analysis either spurious or impossible.

Early childbearing and teenage pregnancies are two distinct events that are often considered as one. Each can have very different implications for the short- and long-term consequences at both the micro- (for the teen mother, the family and the child) and the macro-economic level (for society). Childbearing is often the only observable outcome, given that data on abortions and miscarriages is often unavailable or unreliable.

In the analysis of the consequences of teenage pregnancy and early childbearing, many empirical studies fail to account adequately for confounding factors. The failure to include teenage pregnancy endogeneity may produce biased results and overestimate the true effect of teenage pregnancy and early childbearing. How much do pre-existing disadvantages explain poor outcomes later in life and how much can be attributed to early motherhood per-se? Women who experience pregnancy as adolescents are liable to differ from their female peers. In particular, teen mothers are usually more prone to have disadvantageous socioeconomic backgrounds, which imply both a higher probability of becoming pregnant as adolescents and poorer outcomes, such as educational failures or unemployment.

If one does not take into account this endogenous heterogeneity—in terms of socioeconomic background, parental characteristics and other confounding factors—the con-

sequences of teenage pregnancy and early childbearing could be overstated. Poverty, educational failure, drugs and alcohol consumption, and unemployment are among the potential outcomes of teenage pregnancy that might be potential determinants of it as well. The challenge is to find a feasible methodological approach that can untangle the factors that contribute to teenage pregnancy from the consequences of teenage childbearing.

Few empirical works are able to ascertain causality between teenage pregnancy and negative socioeconomic outcomes beyond establishing a strong correlation between the two. The question of causality versus selection bias invites further investigation, given the mixed evidence revealed in previous studies. For example, recent analyses suggest that most adolescent mothers have already dropped out of school by the time they become pregnant, while adolescents who give birth while still enrolled in school are as likely to graduate as their peers.

Researchers have used a variety of methodological approaches to tackle this problem: quasi-experimental design, instrumental variable and propensity score-matching models, fixed effect approaches, and qualitative analysis. These methods usually compare to a standard OLS regression model to help to identify a lower bound estimation of the effects of teenage pregnancy and early childbearing on the observed outcomes.

In the quasi-experimental design, the challenge is to find events that allow comparison of the outcome for two observable identical populations: one with treatment and the other without. This methodology effectively captures the effect of the treatment if the outcome is independent of the treatment assignment, given a set of observable covariates (Rosenbaum and Rubin 1983).[17] Similarly, the challenge in the instrumental variable approach is to find at least one instrument that can determine teenage pregnancy (or early childbearing) that has no direct effect on the observed outcome.

For example, Hotz et al. (2005), Ashcraft and Lang (2006), and Azevedo et al. (2012) use miscarriages as an instrument to identify the long-term effects of childbearing. The advantage of using miscarriages as an instrumental variable is that it allows correcting for the endogeneity of early childbearing. Miscarriage is likely unrelated to either the other demographic and socio-economic conditions or with the outcomes of the mother (Lang, 2007).[18] Notably, these studies estimate the cost of early childbearing as being conditional on being pregnant, but do not provide information on the potential effect of a randomly-

17 This assumption is referred to as *the unconfoundedness* assumption by Rosenbaum and Rubin (1983); it might also be called conditional independence assumption.
18 Though some people argue that miscarriage is correlated with socioeconomic conditions, the prevalence is uniform in most samples throughout income distribution levels, and consistent with medical data.

chosen adolescent raising a child during her teenage years. Conversely, they estimate the cost for at-risk teenagers who are likely to experience a pregnancy. These women typically experience lower educational and economic opportunities regardless of their fertility decisions. Thus the estimated cost for the teenage mother might represent a lower-bound estimation of the cost to give birth as adolescent.[19] Once they control for confounding factors, the effect of childbearing is moderate or even insignificant.

Studies that use within-family-fixed effects such as Geronimus and Korenman (1992) and Holmlund (2005) arrive at similar results. These papers take into account the unobserved family background heterogeneity by comparing sisters (or cousins) who had their first child at different ages. This approach allows controlling for selection in teenage pregnancy and takes into account unobserved heterogeneity across families. Its drawbacks are that it requires information on at least two sisters (or cousins) within the same household. This approach generally finds that earlier studies on the consequences of early childbearing on teen mothers' employment, marital status, and educational outcomes overstate the consequences of teen childbearing.

Propensity score matching offers another methodology to control for negative selection in teen pregnancy. Given that teenage pregnancy is not a randomized treatment, the challenge lies in choosing a vector of exogenous characteristics to match the two groups of mothers/households, i.e. to credibly identify groups that appear similar. Many studies using this approach perform several balancing tests and specifications to prove its validity and the robustness of its results. Empirical works using this approach generally find that teenage childbearing produces negative effects on schooling attainment, labor market performance, and wages in adulthood in both developing and developed countries (Arceo-Gomez and Campos-Vazquez, 2011 for Mexico; Levine and Painter, 2003 in the United States; Chevalier and Viitanen, 2003, using data from Great Britain; among others).

Comparing the different methodological approaches used to control for confounding factors, the propensity-score matching and the natural experiment approaches, respectively, identify an upper and a lower boundary of the effect of teenage childbearing on several socioeconomic outcomes. The following chapters will make use of the available methods and existing data to tackle the key issues to understand the phenomenon of teenage fertility and its consequences. By delving rigorously into these issues, this Report will try to inform policy design in this area.

19 See Section 3 for further details.

BOX 4. QUALITATIVE STUDY ON TEENAGE PREGNANCY STUDY IN ECUADOR

Fertility rates in Ecuador vary greatly if comparing age groups, ethnicity, socio-economic status, and level of education. If compared to other countries in the region, Ecuador shows relatively high adolescent fertility rates (81.45 births per 1,000 women age 15-19, 2010). And particularly if considering its GDP per capita, Ecuador's teenage pregnancy rate stands at a level much higher than expected. More worrisome though is that high adolescent fertility is persistent over time despite important improvements in access to education, health, and other socio-economic indicators. This is particularly striking as the general fertility rate in Ecuador has been decreasing (3.2 births per woman in 1990 to 2.2 in 2010). As a consequence of these two opposing trends (decreasing general fertility rates / persistently high teenage fertility rates), Ecuador has experienced an increase in the share of adolescent fertility as compared to total fertility, which is to say that: fertility is moving towards younger age groups.

A qualitative study carried out in Ecuador for this report sought to understand the risk factors and social circumstances related to adolescent parenthood. It includes both quantitative and qualitative components.

Researchers can use qualitative methods to disentangle the determinants of teen pregnancy and childbearing. These methods offer specific inside information on the expectations, aspirations and motivations of teenagers. Also, these methods illuminate issues and concepts that are not addressed through quantitative methods and make it possible to incorporate ´real life´ experiences into evidence-based policy making.

The study is composed by a qualitative and a quantitative part: In the qualitative part, researchers used semi-structured, in-depth interviews and mini focus groups to carry out the qualitative section of the study. The quantitative part employed standardized questionnaires aimed at 1,200 boys and girls in the target age group (15-19 years) in two urban settings (Quito and Guayaquil).

The study targets: (i) pregnant teenagers; (ii) women who had a teen pregnancy less than 5 years ago; (iii) partners of either pregnant teenagers or women who had a teen pregnancy; (iv) male and female teenagers in general (between 15 and 19 years of age), i.e., teenage women who have or have not been pregnant and teenage men who have or have not been partner to a pregnant teenager; (v) parents (mothers and fathers of pregnant teenagers and those of teenagers who have not been pregnant), and (vi) key informants from educational institutions, health institutions, government representatives and opinion leaders.

The study aims to capture comprehensive information about perceptions, attitudes, knowledge, values and concerns. It also tries to illuminate significant contextual information such as peer effects, cultural and social norms. One of its major focuses is to understand agency and aspirations of both girls and boys.

Throughout this report we include findings from the qualitative component of the study reported in boxes.

2. The Risk Factors

2.1 TEENAGE PREGNANCY: RATIONALITY, CONTEXT AND CONSTRAINTS

The framework proposed in this Report establishes that teenage fertility decisions are complex because of the different elements involved, namely: (i) the rationality element, stricto sensu; (ii) the behavioral issues that restrict the rational setting (discounting, informational constraints, self control…), and (iii) the social interactions and norms (peer effects, stigma, and so on) which also affect the outcomes. These three elements will be intertwined in the decision process and will affect the outcomes under analysis. Such decision processes, involving the aspects just mentioned above, will in turn be influenced by the macro context, the local social setting as well as the household environment and family background. All these aspects will define the options available for teenage girls to effectively define their life plans (Figure 11).

It is worth highlighting that informational constraints (of the type highlighted in Box 5) are perfectly consistent within a rational framework. In other words, some of the departures from rationality could be explained within a simple rational environment. The full ratio-

FIGURE 11. TEENAGE PREGNANCY: RATIONALITY, CONTEXT AND CONSTRAINTS

	No peer effects	Social interaccions (norms)/peer effects
Full rationality	**A** Standard model	**C** Multiplicity of equilibria arise
Bounded rationality (Behavioural issues/ incomplete information)	**B** Traps may arise	**D** **Most likely scenario**

nality approach would describe situations with both perfect and incomplete information (but rational agents). Conversely, the bounds arise from behavioral issues (discounting present utility, self-control, etc.). The conceptual framework sketched above should be taken as a way of organizing principles rather than a discussion on the theoretical models used to approach teenage pregnancy.

Hotz et al. (2005) argues in favor of a non-negligible component of rationality in early childbearing. This finding may be consistent with estimates based on survey data, which show that about 40% of teen pregnancies are reported as intended (Cherry et al., 2001). The exact estimate is controversial, and not so interesting in itself, while the fact that some pregnancies are indeed intended is what matters. The classic rational framework uses a model of decision-making within a lifecycle horizon to analyze the rationality of early pregnancy. This model allows changes in prices and income over the lifecycle that in turn permit changes in the timing of fertility demand even if they do not cause overall lifetime fertility to change. Thus, early fertility is the relevant issue in this study as a special case in the more general framework, where the timing and spacing of pregnancies is what matters.[20]

In such models, the optimal age to begin childbearing is determined by (i) assumptions of how parents value offspring; (ii) the structure of capital markets, and (iii) how maternal time costs vary over the lifecycle. Assuming perfect markets, the timing of childbearing depends on the costs that are determined by the rate of depreciation of the mother's wages and the level of initial earnings. Under imperfect markets, the trajectory of the father's income becomes important. Parents will postpone childbearing until they minimize its impact on their own consumption. The model can be altered to assume individual decision-making as a special case without having to rely on a two-parent household.

These models are framed within the traditional decision-making theory based on the seminal paper by Becker, where parents present full rationality in making the fertility

20 Theories of fertility in a life-cycle setting blend features of static models with at least four strands of dynamic models of behavior: (i) models of optimal life-cycle consumption; (ii) models of life-cycle labor supply decisions; (iii) models of human capital investment and accumulation, and (iv) stochastic models of human reproduction. A general model contains elements of the four families. The time horizon is characterized in discrete time units, t, and the household lifetime runs from zero to T. The model assumes that couples/individuals make choices to maximize a set of preferences subject to time, budget and technological constraints which govern the (re)production and rearing of children and constraints on the production of the woman's stock of human capital, which determines the value of her time in the labor market at each age. The couple will make these decisions either in a certain or uncertain setting where uncertainty may arise from the stochastic nature of the reproductive process or of the future of income, prices or wage rates they may face. The structure of the solution to the parent's inter-temporal optimization problem differs depending on whether the model includes uncertainty with respect to future birth, income or price realizations versus if it assumes perfect foresight. Changes in price or income at any age will affect whether the couple will want to have a birth at time t, shifting the timing of births over the lifecycle. Unlike static models, children are durable goods whose user cost is a function of the sequences of prices they face.

choice (Figure 11, Scenario A). The parents maximize their utility function given the cost to have a child and their budget constraints.[21] They choose and act under "full rationality," unaffected by the choices of others or social interactions.

Early childbearing is often considered a negative event that can perpetuate intergenerational poverty and social exclusion. Thus, why should a rational agent choose to have a child during adolescence, if we assume that the birth is going to affect negatively the life trajectory of the parents? This might represent a paradox in the "full rationality" setting a la *Becker*. However, the opportunity cost of becoming pregnant might be behind the decision to get pregnant, given the parameters of the economy, which might make the fertility choice a rational decision. For those within the female labor supply, the cost of having a baby might be lower for those becoming pregnant than for those who do not (Ashcraft and Lang, 2006; Flórez and Núñez, 2001; Haveman et al., 1997). A lower income is associated with lower female wages. In this case, the decision to have a baby might be relatively less expensive given the higher price of female time (staying outside of the labor market or substituting work hours with child care time). These models emphasize the "opportunity" aspects of the equation, by establishing that a change in lifetime costs and benefits of early child bearing would induce a different outcome. However, without a believable counterfactual exercise, we cannot dismiss the possibility that teenagers who become mothers could face the same intergenerational consequences (in terms of poverty and social exclusion) even if they remained childless. This issue is extensively discussed in Section 4 on the consequences of early childbearing.

Similarly, recent studies in LAC prove that the quality of education matters for the fertility decision of girls. Näslund-Hadley and Binstock (2010) conducted a study in Peru and Paraguay on a small group of women who bore a child during their adolescence. They find that most of the adolescents who dropped out of school did not believe that education could change their future and would have probably dropped out anyway regardless of their pregnancy. For these girls, it is still the opportunity cost of having a child that is low. The authors conclude that "poor schooling makes pregnancy a rational choice."

Full rationality is clearly a benchmark scenario that cannot reproduce in reality the incidence of teenage pregnancy. Economic models do not allow for explanations for why most teen mothers do not choose to get pregnant and teenage pregnancy may be an unplanned event. In order to better approximate reality, many studies of teenage pregnancy have departed from the traditional framework.

21 The traditional economic models of fertility utilize a collective model approach treating parents as a unique utility maximizer. Willis (1999) adapts Becker's model, using a unitary model approach and incorporating explicitly in the analysis the fertility decision.

BOX 5. SEXUALITY AS A TABOO - CONSTRAINTS TO ACCESS TO QUALITY INFORMATION. EVIDENCE FROM THE QUALITATIVE STUDY IN ECUADOR

One of the objectives of the qualitative study in Ecuador is to assess the extent to which girls and boys are informed about sexual relationships and contraception. Almost all adolescents in Ecuador interviewed for the qualitative part of the study say they were offered sexual education classes in school. However, the vast majority of interviewees claim that the quality of the information provided in school was insufficient and too narrowly focused. Adolescents claim classes limit information to human anatomy rather than birth control, sexual interaction, risks, behavior etc. In particular, they complain that sex education in school does not provide a setting in which they (both girls and boys) feel safe and comfortable to raise questions, clarify doubts and address concerns. For instance, a 22-year-old mother (white-mestizo, complete secondary education, MA 16) says: "(At school the person) who gave us that (sexual education) was a doctor, the principal. He explained it to us, but not how it really was, no. They only taught us about gestation and pregnancy and what a man has and what a woman has, that was it. And left the rest to the imagination, that's what happened to me (laughing)."

Another girl, a 19-year-old mother (white, incomplete superior, MT) puts it even more critically: "At school they only tell you that you're going to get sick, and that the first sex does not affect you – or say nothing happens - and such, but they never teach you any methods. They just tell you it is a sexual relationship, only the science, the penetration, the sperm, the egg, but about contraceptives they don't teach you anything. In other words, only the sexuality issue but not about the use of condoms or anything similar. Only sometimes condom use, but there are things that women can use. *And that is what you think they should teach in school?* They should teach, exactly. What you get in school is how to get pregnant, but they never tell you how to NOT get pregnant."

In addition to the fact that the information provided in school is perceived as too technical and not linked sufficiently to adolescents' realities, their families are not able to fill this gap: Adolescents explain that they are ashamed to have a dialogue about sexuality at home, and they feel that their families are equally ashamed and treat these issues as a taboo. A father of a child, and partner to an adolescent girl (27 years, incomplete secondary, MB) explains: "But at home parents are looking for a suitable word to convey one message, but they seek and seek and from so much seeking they do not find it, because they think we are going to think badly of them."

Another girl, 17 years old and pregnant (mestiza, incomplete secondary education, B) is very forthcoming about the lack of communication being the main reason why unplanned teenage pregnancies happen so often: *"Why do you think teenage pregnancy happens?* Lack of communication with parents and lack of information. Lack of really thinking about it, that is my case, lack of communication with my parents and lack of information. Lack of information. How would you have wished this communication to be? Speak about it like it is, because some people talk about it, they speak like… I don't know. They explain things in a way one does not understand. Simply, there should be clear words. There should be."

Teenagers often make the fertility decision in a bounded rationality setting (Figure 11, Scenario B) that recognizes the rationality of the decision-maker with an awareness of the cognitive limitations the agent faces in the attempt to maximize her own utility. Within this setting, behavioral aspects become particularly relevant. "Myopic" behavior, discounting future outcomes disproportionately with respect to current utility, time inconsistency and lack of self control, and other departures from full rationality play a crucial role in this scenario. It has been shown that at early ages, problems related to self-control and time inconsistency in decision making are exacerbated, with obvious implications for unintended pregnancy.[22]

In a bounded rationality setting, the bounds might also originate from constraints of a different nature, such as incomplete information. Many policy interventions to prevent unplanned teenage pregnancy focus on providing adolescents with adequate sexual education and complete information regarding, for example, contraceptive methods.

Other bounds might arise from the nature of the decision-making process and the uncertainty of future expected outcomes. In the real world, individuals have expectations about the future and the return of choices. There is always an implicit trade-off between present versus long-run utility. *Behavioral economists suggest that teens are "hyperbolic discounters."* They place disproportionate weight on present well-being as compared to future utility which might not lead to an efficient choice in the long-run (O'Donohue and Rabin, 1999).

Finally, other bounds might relate to the capability of teenagers to decide about their future, i.e. the concept of agency that Sen (1985) defines as "what a person is free to do and achieve, in pursuit of whatever goals or values he or she regards as important." The etymology of agency suggests the capacity "to do, drive or lead." The World Development Report 2012 (World Bank, 2012) recognizes *agency* as one of three primary dimensions of gender equality and defines it as "the ability to make effective choices and to transform those choices into desired outcomes." This definition implies two dimensions: (i) internal motivation to make a choice or act upon one's desires (internal aspect of agency) and (ii) absence of unsurpassable exogenous constraints (external) related to the "existence of choice" (i.e., opportunity to make a choice) and the "use of choice" (whether a person actually uses that opportunity). This is a crucial social dimension in the life of the adolescent, where social norms, the need to be accepted and the perceived capacity to belong to a community in a meaningful sense do influence behavior.

22 This is so even without considering substance abuse and "behavior under arousal" (see Ariely and Lowenstein, 2006).

BOX 6. LACK OF CONTROL OVER LIFE PROJECTS: EVIDENCE FROM THE QUALITATIVE STUDY IN ECUADOR

The overwhelming majority of girls interviewed for the qualitative study in Ecuador do not mention an explicit and conscious motivation to their pregnancy. With very few exceptions, interviewees explain that they did not have a concrete plan to get pregnant, but when they realized it 'had happened' they finally got used to the idea and are now happy with their child.

The passivity in which they accept how their lives happen to them is a clear reflection of the lack of agency: Those youths are not in the driver seat – but they are *driven* by external factors and actors. The pregnancy "happened due to – life itself", lack of prevention and carelessness. This absence of decision-making is even more crucial as it is during adolescence that youth form their life project. The descriptions of the fact that they had unprotected sex stress the idea of their lacking capacity to exercise control over their actions and decisions: "For once it's ok. I was 19 and had several boyfriends, I knew, but anyway got pregnant, we both knew how to protect ourselves, but did not do it. The sexual pleasure was stronger." (25-year-old mother, white-mestiza, complete secondary education, MB). Another girl argues: "It was natural, we didn't know what was going to happen, I, too, was completely innocent, didn't know any better, and it happened and he told me that I was pregnant" (Adolescent mother, 20 years, white-mestiza, complete secondary education, MT).

While adolescents report that they have known about the risks, they at the same time state that they were not able to connect them to their own lives. Young people's preferences as formulated in the interviews sometimes seem not very well-reflected and appear to lack a conscious balance of consequences. As a mother of an almost 5-year-old boy (25 years, complete secondary education, MB) explains: "In my case, I think it was "whatdoesitmatterism" (quemimportismo), I think it was more that. I don't think it was ignorance (…). I think it was that. *Was this "whatdoesitmatterism" the reason why you were not giving much importance or why?* I did not care if I would get pregnant or not at that point."

The immediate decisions are made without a fully-fledged forward-looking analysis. Adolescents take their day-to-day decisions on an immediate preference basis, without always taking the larger picture into account. Several interviewees stress the idea that information on the consequences of getting pregnant would have been useful given that adolescents are not always aware of what the underlying risks of unprotected sex are and simply do not reflect on the concrete impacts on their lives: "It is really the lack of education, preparedness, and informative lectures at the educational level on this topic. Telling us about the risks of early pregnancy and what we are missing when we get pregnant too early, instead of going through the normal stages of life the way it should be, we lose many things. Me, for example, I missed my studies and the fact that I can't think about my own future, because I have to think about my son and I am not prepared physically or emotionally for that, but it's here and I have to take responsibility" (20-year-old mother, white, complete secondary education, MT).

More recently, the economic literature on decision-making processes emphasizes social interactions as determining factors (Figure 11, Scenario C). Due to social interactions, individual decisions are not independent (Manski, 2000). Individuals show a tendency to interact with others with similar characteristics and tend to make conforming choices (Marsden, 1988; Akerlof and Kranton, 2000; Lopez-Calva, 2002; Cooley, 2010). Teenage pregnancy relates not only to poverty and education levels but to important cultural health dimensions as well. Empirical evidence exists on the impact of social influences on fertility (Behrman et al. 2002; Behrman et al. 2009; Kohler et al. 2001). In particular, some studies have researched the impact of social influence on fertility within (i) ethnic or religious groups in developing countries (Manski and Mayshar, 2003), (ii) geographic areas or neighborhoods (Bloom, et al. 2008), (iii) workplaces (Hensvik and Nilsson, 2010; Ciliberto et al., 2010), and (iv) families (Kuziemko, 2006).

Any discussion of rationality-based fertility models must extend to introduce social norm types of effects that are context-related (following Akerlof and Kranton, 2000, 2002). This rationale creates a better understanding of the potential effects of norms and whether they reinforce or offset the effects of price- and cost-related standard effects. Young (2007, 2009) has used "agent-based" models that allow for different degrees and rationality while introducing the effect of social interactions to simulate social-outcome trajectories—in the case of Young (2007), to analyze obesity).[23] Qualitative data vitally supports this analysis.

The framework used in this Report assumes that the actual situation in which teenage fertility decisions take place is consistent with scenario D in Figure 11. Thus, rational aspects related to opportunities, assets and expectations are mixed with behavioral phenomena that constrain fully rational behavior, and are complicated even further by the existence of social norms and peer effects that influence young people's choices. Not surprisingly, the outcome we observe is only partially explained by simplistic fertility models, and policies that are not comprehensive in nature are doomed to have weak impacts.

Within this framework, the notion of agency acquires particular salience, but its role is ambiguous. Women may get pregnant due to a lack of *agency* – by following existing norms or socially accepted behaviors or by having low bargaining power in their relationship and thus being unable to get their partners agree on the use of contraceptives. But it may also be the case that getting pregnant may be the only way to acquire control over their lives and earn the respect of their community. Evidence from qualitative studies in Brazil and Bolivia highlights the link between teen pregnancies and poverty. It reveals that many young girls become pregnant to establish themselves in a slum or a rural society where they lack educational and labor market opportunities.[24] Childbearing may

23 Agent-Based Computational Modeling (ABM) is described in Castaneda (2009).
24 http://imaginingourselves.imow.org/pb/Story.aspx?id=1133&lang=1&g=0

BOX 7. IN SEARCH OF AUTONOMY: EARLY PREGNANCY AS THE WAY OUT OF PARENTAL HOMES AND TYING UP LINKS TO THEIR PARTNERS. EVIDENCE FROM THE QUALITATIVE STUDY IN ECUADOR

While the majority of interviewees in the Ecuador study claim that they did not consciently decide and plan to have a baby, some adolescent mothers describe their pregnancy as a way to escape from the constraints posed by their families and from an environment that impeded them from living the life they wanted. Sometimes the home does not only constitute a space of excessive control but several interviewees describe domestic spaces dominated by violence. This then functions as a trigger to encourage them to leave their homes.

Others describe their pregnancy as intended as it constitutes a way to connect more closely to their partner and to overcome parental control: "We even celebrated it, I remember when they gave us the paper he asked me to open and I said, you open it, and we open and it was positive, then he hugged me and we were so happy, we were going to be together and nobody would set us apart" (Mother with baby, 22 years, mestiza, incomplete superior education, MT).

It is notable that forming a new family and one's own home seems to be the only exit option to the girls. This is quite remarkable as it constitutes a reflection of the limited set of opportunities available to them and of low levels of self-esteem and sense of empowerment at the same time. At the same time, this is linked to the lack of a capacity to aspire for something beyond the formation of a home, which we will discuss more in-depth in a separate section.

actually prove a social-mobility mechanism for poor women in specific contexts. In some cases adolescent girls aspire to be respected from their own family. Exhibiting responsible behavior by caring for the baby can earn them such respect. In other cases, girls consider childbearing as a means to gain status within the community and establish their adult identity (Näslund-Hadley and Binstock, 2010). Feeling accepted or respected generates a positive utility that is the non-pecuniary pay-off component of an individual's welfare valuation described by Akerlof and Kranton (2002). The authors suggest that the pecuniary return is not the only motive of individual choices. Individuals might maximize their utility function by choosing an alternative that does not maximize expected monetary returns. Particularly if the chances for socioeconomic advancements are limited, young women might consider having a baby as an instrument of social mobility (Clark, 1965; Lewis, 1969; Wilson, 1987).

BOX 8. SOCIAL INTERACTIONS AND REDUCED STIGMA COST. EVIDENCES FROM THE QUALITATIVE STUDY IN ECUADOR

Aspirations and life plans are shaped also by observation. Thus, one of the very clear and broadly observed issues that emerged from the qualitative study in Ecuador is the fact that adolescent mothers and their partners perceive adolescent parenthood as absolutely common – as 'normal'. Among adolescent girls interviewed for the study as well as with focus group participants, everyone knows someone relatively close – a friend, a companion, a cousin, a sister, a neighbor – who has had a teen pregnancy. For instance, a 19-year-old mother (incomplete secondary education, MT), who when asked how common she thinks teenage pregnancy is, answers: "Very, very common. I think it is a lack of communication." Another girl (19 years, incomplete superior education, MT) describes the following: "Then, I had my friends from school, some from college, but independent from that, some of them went through a situation similar to mine. In my group of friends from school we were four. Three of us are already are mothers." Also participants in focus groups (girls, upper-middle class, 12-15, Guayaquil) who did not have a pregnancy mention that, in Ecuador, teenage pregnancy is not unusual at all: "Almost 50%, I believe."

This implies that stigmatization costs are reduced given the normalization of the phenomenon. Only very few mention that they felt there was discrimination towards adolescents with children. They had almost not a single complaint about treatment by health or educational staff. This underscores the idea that they do feel they are not completely behaving contrary to societal expectations.

In other words, social norms and stereotypes might play a crucial role in this choice, as will be discussed later on. Whereas in some settings having a baby becomes a means of improving their social status and ensuring respect from the community, in some others it might create a stigma, especially when implies out-of-wedlock sex. The stigma of getting pregnant is more likely to arise in a context where teenage pregnancy is low. Where getting pregnant at an early age is more common, it is also more likely to be socially accepted and thus the cost of acting in this fashion is lower. Evidence from the qualitative study in Ecuador supports the idea that in some cases being a young mother can also increase the control of women over their lives and can give a "purpose" and a role in the society. The role of stereotypes and social norms is discussed in the risk-factor section below.

BOX 9. LACK OF AGENCY: GIRLS´ LOW BARGAINING POWER TO NEGOTIATE CONTRACEPTION. EVIDENCE FROM THE QUALITATIVE STUDY IN ECUADOR

The findings from the qualitative study in Ecuador show that the sexuality of young adolescent girls seems to be constructed around traditional gender roles linked to maternity and the reproductive role, and in particular around traditional passivity. Participants in focus groups and interviewees reflect ideas of the girls' dedication of virginity and of passivity. These deeply-rooted gender stereotypes assign a passive role to women and girls, making it difficult for them to negotiate their sexuality and have complete autonomy over their bodies. They culminate in clear power asymmetries within couples as well as in female submissiveness. Some adolescent girls report they tried to convince their partner to use a condom, not always successfully: "Before having sexual relations I would ask him to use protection, to use a condom, but he always said no, that he was not comfortable using it and we ended up doing it without. Doing it without protection? Yes. *Were you aware of the possibility of getting pregnant?* Yes." (18-year-old mother, mestiza, complete secondary education.)

Another informant, now 21 years old, is currently pregnant with her second baby. She was pregnant with her first baby when she was 15. She believes that the main reasons for teenage pregnancy include lack of information and "emotional blackmail from the boys."

Peer pressure and social norms also affect agency (Krueger, et al. 2009). Some studies have used the experience of migrants to analyze the transfer of fertility norms (Beine et al., 2008).

One more important factor is the psychological dimension of teenage sexuality and the dynamics of the couple. Past research has found that prior low self-esteem can be predictive of a range of risky behavior during adolescence, such as substance abuse, juvenile delinquency, early sexual activity and early pregnancy (McGee and Williams, 2000; Wells and Rankin, 1983). Low self-confidence makes girls more vulnerable. They might be more susceptible to the influence of peers from whom they seek approval or have lower bargaining power with their partner in the decision to use contraceptives to prevent pregnancy. Higher self-confidence might help prevent unwanted pregnancy and provide teenagers with the psychological resources to deal with childbearing (Longmore, et al., 2004).

BOX 10. TEENAGE PREGNANCY AND ABORTION: FORMAL AND INFORMAL INSTITUTIONAL BARRIERS

Around 60% of teenage pregnancies are unplanned and at high risk to end in abortion. Where laws restrict induced abortion, *adolescents have the highest risk of serious complications from unsafe abortions*.

Formal or informal institutional barriers often restrict access to abortion. Laws might penalize abortion or social and cultural norms might constrain access. Reliable data on abortion is very limited and frequently unreliable, especially in regions such as LAC, where laws are highly restrictive (Table 4). Official statistics tend to underreport the actual abortion rate.

In all LAC countries, abortion is illegal, with some exceptions based on the circumstances in which pregnancy occurred and potential health risks for the mother. Some exceptions exist where regional or municipal governments decriminalize the procedure. For example, Mexico City has decriminalized abortion while it remains illegal in the rest of the country, with some regional variations.

Even where abortion is legal, social and cultural norms and religious beliefs can constrain access to services. Many sociological studies to investigate the basis for adolescent fertility choices recognize the importance of social norms and sanctions (Brewster 1994a; Stack and Burton 1993). These typically vary by socioeconomic context and composition, gender, ethnicity, and religion. While surveys encounter difficulties in their attempts to instrument norms, some qualitative evidence of their impact exists (see, for example, Crane 1991; Brewster, et al., 1993; Brewster 1994b).

A recent survey conducted by FLACSO Chile (2011) in Brazil, Chile, Mexico and Nicaragua reveals that most people oppose abortion except in cases that pose a risk to the life or the health of the mother. The survey asks around 1,200 women and men of different age, ethnicity and regions in each country how they would vote on the legalization of abortion. Most individuals opposed legalization although a higher percentage favored therapeutic abortions (Figure 12).

While the resistance to abortion diminishes whenever the life or health of the mother is at severe risk, only about 16% of participants in Nicaragua, Brazil and Chile, and 23% in Mexico, support abortion if the pregnant woman is a minor.

Extreme resistance to abortion a ppears to mirror restrictive legislation on abortion. Notably, the opposition to abortion is stronger in Nicaragua and Chile—two of the four LAC countries with the most restrictive legislation on abortion—than in Mexico and Brazil. In Nicaragua, 81.4% of those interviewed would vote against the decriminalization of abortion. In Chile, only 26.6% of persons favored therapeutic abortion.

TABLE 4. FORMAL INSTITUTIONAL BARRIERS TO ABORTION:
ABORTION LEGISLATION IN LAC

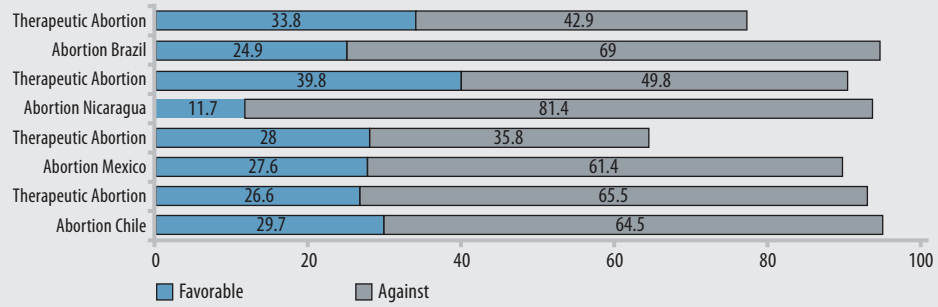
	Illegal				Exceptions		
	Yes	No	Yes	No	To save the life of the mother	To preserve the physical and mental health of the mother	In cases of rape or incest
Argentina	x		x		x	x	x
Bolivia	x		x		x	x	x
Brazil	x		x		x		x
Chile	x			x			
Colombia	x		x		x		
Costa Rica	x		x		x	x	
Dominican Republic	x			x			
Ecuador	x		x				x
El Salvador	x			x			
Guatemala	x		x		x		
Haiti	x		x		x		
Honduras	x		x		x		
Jamaica	x		x		x	x	x
Mexico	x		x		x		x
Nicaragua	x			x			
Panama	x		x		x	x	x
Paraguay	x		x		x		
Peru	x		x		x	x	
Trinidad and Tobago	x		x		x	x	
Uruguay	x		x		x	x	x
Venezuela, RB	x		x		x		

Source: United Nations. Population Policy Data Bank, Population Division, Department of Economic and Social Affairs and FLACSO: http://issuu.com/flacso.chile/docs/dinamicas_politicas_sobre_aborto. In Mexico, the exception is Mexico City which in 2007 decriminalized abortion. Argentina and Ecuador: In case of rape or incest abortion is permitted only if the mother has mental problems. Panama and Colombia: Abortion is permitted in case of fetal problems.

In addition to legislation and social sanctions, *access to hospitals and medical infrastructure* poses another potential obstacle to abortion. In poor rural areas where the incidence of adolescent pregnancy is higher and the availability of hospital services is lower, the incidence of unsafe abortion practices is likely higher.

In a study on teenage childbearing in the United States, Ashcraft and Lang (2006) show that *teenage mothers who choose abortion are likely to come from more privileged backgrounds*. Their access to abortion is usually easier due to fewer economic restrictions, better access to hospitals or fewer social sanctions. Furthermore, they may face a higher opportunity cost for having a child than pregnant teenagers from a lower socioeconomic background, which would strengthen the case to abort.

FIGURE 12. SOCIAL ACCEPTANCE OF ABORTION: A STUDY FROM BRAZIL, CHILE, MEXICO AND NICARAGUA



Source: FLACSO Chile (2011), "Estudio De Opinión Pública Sobre Aborto Brasil, Chile, México Nicaragua." Percentages do not sum up to 100 because of no responses. Authors' calculations.

2.2 RISK FACTORS

This section reviews the main risk factors associated with early childbearing. The term comes from the epidemiologic literature to describe only associations and not causal relations. Risk-factor analysis thus differs substantially from the "analysis of determinants," which investigates causal relationships.

Reverse causality problems in the analysis of teenage pregnancy might create misunderstandings over which direction the potential causality flows, i.e. whether poverty causes teenage pregnancy, or the reverse. Many of the confounding risk factors might be endogenous. Unobserved characteristics might correlate with both the observed risk factor and the fertility decision. We do not attempt to make any causal inferences in this section. The objective is to reveal significant associations between the adolescent fertility rate and the main characteristics that correlate with the phenomenon.

One significant limitation is that the analysis considers planned and unplanned pregnancies together. While in principle this differentiation is significant, the scarce availability of ad-hoc data to study fertility decisions in LAC inhibits this kind of distinction. Although the issue is not necessarily relevant to the effects and social costs of teen pregnancy, the heterogeneity of the determinants certainly matters in terms of the policy implications. Other public health issues, such as obesity, have recently incorporated this factor (OECD, 2010). However, teenage pregnancy presents not only a lack of appropriate data but also the challenge to discern between planned and unplanned (mistimed) pregnancy, as well as whether the teenager actively sought pregnancy or if she was actively trying to avoid it.

This risk-factor analysis might employ a macro (Section 2.1.1) or a micro perspective (Section 2.1.2). The macro approach examines the conditions in which teenage pregnancy is more probable by exploiting the variability of adolescent fertility rate across countries. The micro approach magnifies the adolescent fertility choice in terms of either individual or more aggregated risk factors associated with early childbearing.

2.2.1 Macro-level risk factors

The decision to delay initial sexual intercourse or eventual pregnancy results from the interaction of markets, institutions and households. For the analysis of the macro-level risk factors, we use a pooled sample of cross-country and time-series observations spanning the period 1990 to 2010. The sample contains 130 countries (26 from Latin America and the Caribbean). Data on the adolescent birth rate (defined as the annual births per 1000

women, age 15 to 19) is from the United Nations Population Division.[25] All other data is from the World Development Indicators. We based the selection of variables on two criteria: (i) social science relevance to the issue of adolescent fertility, and (ii) data availability for the period of interest.

Multivariate regression analysis attempts to isolate the variables that may be driving adolescent fertility in LAC.[26] The findings show that adolescent fertility correlates positively with poverty and inequality, using the GDP per capita, the poverty headcount ratio, and the Gini index as indicators. Adolescent fertility also positively correlates with the share of public health expenditure, the female labor force participation rate, and the share of women in wage employment (of all women who are employed). Conversely, adolescent fertility negatively correlates with the share of rural population and unemployment.

The adolescent fertility rate negatively correlates with education at both the primary and secondary level. Increases in the primary completion rate or in the years of secondary education decrease the adolescent fertility rate. These results are consistent with those found by previous studies. More-educated mothers have fewer children, with a lower likelihood of adolescent pregnancy or unwanted pregnancy incidence (Rosenzweig and Schultz, 1985). Furthermore, higher education relates to a desire for smaller family size (Schultz 1993). Lam and Duryea (1999) showed that the effect of schooling on fertility is negative and particularly strong at low levels of education in Brazil. Merrick (1989) and Martine (1995) arrived at the same result. Consistently with the female labor supply explanation of Becker, the opportunity cost of childbearing is higher for more educated women (Birdsall 1988; Schultz 1993). Merrick (1989) and Martine (1995) associate the decline of the fertility rate in Brazil during the economic growth of the 1960s and 1970s mainly to the increase of female education and labor market participation.

In a second iteration, the analysis includes regional dummies in the regression. Findings drastically change when controlling for regional effects. It seems that the regional dummies capture most of the correlation between the regressors and the dependent variable. For example, the Gini coefficient is no longer significant after controlling for time-invariant heterogeneity at the regional level. The correlation with the poverty headcount ratio and education variables remains significant and maintains the same sign. The interpretation is that there is a high correlation between regional dummies and inequality. Indeed, the regional control for LAC picks up the effect of it being the most unequal region in the world.

25 United Nations, Department of Economic and Social Affairs, Population Division (2011). 2011 Update for the MDG Database: Adolescent Birth Rate (POP/DB/Fert/A/MDG2011).
26 The adolescent fertility rate is estimated through ordinary least squares estimation.

The final model is a country-fixed effect to control for across countries time-invariant heterogeneity.[27] In this more robust specification, the adolescent fertility remains significantly correlated with GDP per capita, the poverty headcount, and the total fertility rate. Interestingly, adolescent fertility is positively and significantly (at the 99% confidence level) associated with the GDP growth rate. This relationship was not significant with the simple OLS regression analysis. Perhaps this is because poorer countries with higher adolescent fertility are growing faster. However this hypothesis requires further exploration.

Another significant result is that once the country-fixed effect is included the sign of the coefficient for the share of rural population changes and become positively correlated with the adolescent fertility rate. Teenage fertility is generally higher in rural than in urban areas, which is consistent with the country-fixed effect results. Following the classic approach of Becker, one possible explanation is that women living in urban areas may have better access to education and jobs than rural women, and thus have more incentives to delay the birth of their first child.

In order to contextualize the results, the last column reports the predicted adolescent fertility for an "average" LAC country, i.e. conditioning on the mean values of the corresponding regressors across all LAC countries.[28] Using this approximation, one can estimate the likely average change in adolescent fertility in LAC in response to a change in the correlates. Furthermore, it allows the computation of the predicted level of fertility rates, while holding all other characteristics constant at the average level.

The predicted level of teenage pregnancy for average levels of the independent variables included in regression (1) is 75.9 births per 1,000 women ages 15 to 19 (Table 5). We consider the independent variables for which the estimation coefficients are significant in the fixed effects regression (GDP per capita, GDP growth, the poverty headcount, the share of the rural population, and the total fertility rate). Controlling for other factors, a one percentage point increase in the aforementioned independent variables in all probability correlates with a -1.30%[29], 0.38%, 0.24%, 1.00% and 30.46% change in adolescent fertility, respectively.[30] Clearly, an increase in the total fertility rate could possibly have a large impact on the adolescent fertility rate.

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27 To help control for heterogeneity that is not time-invariant and to aid with the problem of reverse causality, an Arellano-Bond difference GMM estimator was used. However, because of the periodicity of the data and the need to use lagged variables, this resulted in the loss of an undue amount of relevant information.

28 More specifically, the expected adolescent fertility rate is estimated as following:

$$\hat{y} = \hat{\beta}_0 + \hat{\beta}_1 x_1 + \hat{\beta}_2 x_2 + \ldots + \hat{\beta}_n x_n$$

where x1-xn are the mean values of the corresponding regressors within the LAC region reported in the fourth column.

29 Given that in 2005 the average GDP per capita (current USD) in LAC region is 5.010 (WDI, 2005), a 1 percent increase of the GDP per capita corresponding to 50 USD is correlated with a -1.30 percent decrease of the teenage fertility rate.

30 These percentages are computed by dividing each parameter by the predicted adolescent fertility rate computed, holding all the variables at their mean value and multiplying by 100.

TABLE 5. CORRELATES OF ADOLESCENT FERTILITY - MULTIVARIATE REGRESSION ANALYSIS

	OLS	OLS with regional dummies	Country fixed effects	Mean values of regressors (LAC countries)	Predicted change in adolescent fertility
GDP per capita, PPP (constant 2005 international $ thousands)	-0.90* (-0.54)	-0.54 (-0.44)	-0.99*** (-0.26)	8.49	-8.20
GDP growth (annual %)	0.04 (-0.41)	0.51 (-0.35)	0.29*** (-0.08)	3.14	0.92
Poverty headcount ratio at $2 a day (PPP) (% of population)	0.25* (-0.14)	0.26** (-0.12)	0.18*** (-0.05)	15.46	2.86
Income of the bottom 10 % relative to the top 10 %	14.81 (-113.92)	-75.14 (-93.01)	-36.49 (-44.66)	0.03	-0.97
GINI index	1.41** (-0.61)	0.01 (-0.54)	-0.24 (-0.25)	51.57	-9.30
Share of rural population	-0.41*** (-0.15)	0.12 (-0.15)	0.76** (-0.35)	24.15	18.86
Health expenditure, public (% of GDP)	5.44*** (-1.35)	0.39 (-1.31)	0.72 (-0.62)	3.89	3.08
Unemployment, total (% of total labor force)	-0.74*** (-0.27)	-0.08 (-0.24)	0.07 (-0.12)	9.87	0.82
Labor participation rate, female (% of female population ages 15+)	0.59*** (-0.19)	0.11 (-0.17)	-0.06 (-0.13)	46.76	-1.69
Wage and salaried workers, female (% of females employed)	-0.49*** (-0.19)	-0.10 (-0.17)	-0.04 (-0.12)	66.47	-0.67
Proportion of seats held by women in national parliaments (%)	-0.15 (-0.22)	-0.36* (-0.19)	0.06 (-0.07)	14.93	0.77
Contributing family workers, female (% of females employed)	-0.28 (-0.20)	0.10 (-0.19)	0.04 (-0.13)	5.63	0.35
Primary education, duration (years)	-3.99 (-2.51)	-4.76** (-2.10)	0.31 (-0.94)	5.80	2.31
Primary completion rate, total (% of relevant age group)	-0.36* (-0.19)	-0.35** (-0.16)	0.04 (-0.07)	94.00	5.58
Secondary education, duration (years)	-6.84*** (-2.52)	-3.51* (-2.10)	0.61 (-0.92)	6.07	4.05
Fertility rate, total (births per woman ages 15-49)	10.51**	0.49	23.11***	2.50	57.11
Regional dummies					
Europe and Central Asia	. .	-3.14 (-7.72)	. .	. .	. .
Latin America and Caribbean	. .	45.85*** (-9.41)	. .	. .	. .
Middle East and North Africa	. .	-23.82*** (-9.23)	. .	. .	. .
Number of observations	108	108	108	Predicted level of adolescent fertility	75.88
Number of countries	38	38	38		
R2	0.8458	0.902	0.9996		

*note: *** p<0.01, ** p<0.05, * p<0.1 . Source: WDI, authors' calculations.*

As mentioned previously, the regression coefficients estimate correlations between the variables and should therefore be interpreted with caution. Still, this exercise can illustrate how changes in the risk factors, i.e. in the macro context in which early pregnancy occurs, can affect the prevalence of teenage pregnancy. However, these studies suffer from several weaknesses. At best, cross-country studies produce estimates of average relationships between variables which may be of limited relevance to individual countries. It may be the case that causality runs not from adolescent fertility rates to other variables—for instance poverty rates—but in the opposite direction, so that a higher rate of teenage pregnancy tends to increase poverty. Rather than making hard claims of causality, the analysis provides suggestive evidence on possible associations between adolescent fertility and relevant macro variables.

2.2.2 Micro-level risk factors: Sketching the profile of teen mothers in LAC

The risk factors associated with teenage pregnancy of particular relevance for Latin America can be classified into three groups: economic opportunities, agency and aspirations. This section aims to present some evidence on these main factors using data from LAC, rather than providing an exhaustive review of all possible risk factors.

Table 6 presents the estimates of the probability of becoming a teenage mother (age 15-19) using DHS data for several countries and a linear probability model regression. The countries included in the analysis are: Bolivia (2008), Colombia (2010), Dominican Republic (2007), Haiti (2006), Honduras (2006), and Peru (2008). Teenage motherhood is a function of (i) age; (ii) years of education; (iii) marital status (defined as a dummy variable equal to 1 for both married and cohabitating teenagers); (iv) exposure time (the life period of sexual activity calculated as the present age minus the initial age); (v) three variables that define the use of contraceptives; (vi) the wealth index of the household (computed as an indicator of household appliances); (vi) a dummy equal to 1 if the teenager lives in an urban area, and (vii) a continuous variable for household size.

The analysis defines the use of contraceptive methods as (i) no contraceptive; (ii) folkloric; (iii) traditional, and (iv) modern.[31] The first group does not include those who have never had sex because their risk of getting pregnant is null.[32] The study positively correlates age with the probability of being a teenage mother for the whole sample and for the 15-17 years subsample. Those adolescents who have more education, live in urban areas and

31 Modern methods include female sterilization (tubal ligation, laparectomy), male sterilization (vasectomy), the contraceptive pill (oral contraceptives), intrauterine contraceptive device (IUD), injectables (Depo-Provera), implants (Norplant), female condom, male condom, diaphragm, contraceptive foam and contraceptive jelly, lactational amenorrhea method (LAM) and emergency contraception. Traditional methods include periodic abstinence (rhythm, calendar method) and withdrawal (coitus interruptus). Folkloric methods include herbs, amulets, gris-gris, etc.
32 The results are robust, excluding also those who have been sexually inactive in the last month.

come from wealthier families have a lower probability of getting pregnant. These results are consistent with those found in previous literature. In general, pregnant teenagers are more vulnerable and poorer than comparable adolescents who do not have children. For example, Azevedo et al. (2012) find that in Mexico, pregnant teenagers are more likely to be indigenous and to come from less wealthy families. Similarly, Arias and Lopez-Calva (2012), using Young Lives data for Peru, find that the incidence of teenage motherhood is lower in the wealthier quarter of the population than at lower levels of the wealth distribution.

Being married or cohabiting correlates positively with the probability of getting pregnant for the three specifications. An early sexual debut and longer exposure to sexual intercourse correlates positively with the probability of having a baby. Similarly, Flórez and Núñez (2001) used DHS data from six LAC countries (Bolivia, Brazil, Colombia, Guatemala, Dominican Republic and Peru) to show that education and the socioeconomic condition of the household (measured by the possession of assets) produce negative effects on the timing of teenage fertility. This finding derives mainly from the delay in the age at which teenagers become sexually active. Azevedo et al. (2012) found that teenagers who do not live in the same household as their fathers are more likely to become pregnant. Those with younger parents tend to begin sexual activity and form unions at a significantly earlier age.

The correlation between the use of contraceptives and the probability of pregnancy is less clear. In all countries, teenagers using traditional contraceptive methods have a lower probability than those who do not use any contraceptives. However, the use of modern contraceptive methods positively correlates with the probability of getting pregnant in three of the six countries. The 2007 UNICEF/ECLAC study on Latin America teenage pregnancy reports that the increase in contraceptive use has not necessarily translated into a reduction of teenage fertility. Different explanations might exist for the positive correlation found. One of these is the inappropriate usage of contraceptives. Furthermore, it might be the case that those using these contraceptive methods have more intense sexual activity and thus a higher risk of becoming pregnant. Interestingly, the use of condoms in the first sexual intercourse relates negatively to the probability of getting pregnant. This might suggest that sexual education and access to contraceptive methods are crucial to prevent motherhood among the youngest.

As previously mentioned, however, women who become pregnant as teenagers differ along a number of unobserved dimensions from those who delay childbearing, and their condition gives rise inevitably to a potential selection bias when comparing the two outcomes.

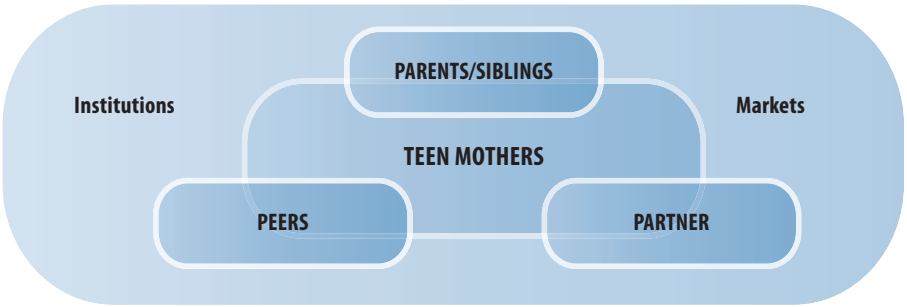
For example, the context of where an adolescent lives, studies, works or spends her free time affects her behavior and decisions and will likely prove different for those teenag-

TABLE 6. THE PROBABILITY OF GETTING PREGNANT AS ADOLESCENTS: CORRELATES USING DHS DATA

Teen mothers Age 15-19	Bolivia	Colombia	Dominican Rep.	Haiti	Honduras	Peru
Age	0.0172	0.0371***	0.0530***	0.0410*	0.0522***	0.0287
	(0.0179)	(0.00979)	(0.0142)	(0.0246)	(0.0136)	(0.0234)
Years of education	-0.0143*	-0.0279***	-0.00461	-0.0126	-0.0264***	-0.00882
	(0.00758)	(0.00456)	(0.00380)	(0.0109)	(0.00608)	(0.0133)
Married or Cohabiting	0.155***	0.234***	0.102***	0.0821	-0.0485	0.177***
	(0.0448)	(0.0239)	(0.0394)	(0.0658)	(0.0420)	(0.0571)
Exposure time	0.113***	0.0926***	0.0865***	0.0689***	0.112***	0.127***
	(0.0138)	(0.00735)	(0.0121)	(0.0197)	(0.0106)	(0.0164)
Currently use traditional contraceptive methods	-0.255***	-0.177***	0.0619	-0.330***	0.0290	-0.261***
	(0.0563)	(0.0356)	(0.0757)	(0.0724)	(0.0662)	(0.0697)
Currently use modern contraceptive methods	-0.117**	0.0792***	0.163***	-0.0569	0.171***	-0.103*
	(0.0457)	(0.0241)	(0.0344)	(0.0773)	(0.0348)	(0.0575)
Used condom at first sexual intercourse	-0.165***	-0.0327	-0.150***	-0.121*	-0.0555	-0.141*
	(0.0583)	(0.0219)	(0.0395)	(0.0721)	(0.0615)	(0.0750)
Wealth_2	0.0860	0.0158	0.0393	-0.237**	-0.0521	-0.0402
	(0.0566)	(0.0303)	(0.0435)	(0.104)	(0.0409)	(0.0730)
Wealth_3	0.0107	-0.0158	-0.0683	-0.0919	-0.0306	0.0677
	(0.0660)	(0.0389)	(0.0533)	(0.106)	(0.0452)	(0.0945)
Wealth_4	0.0958	-0.0757*	-0.0598	-0.0784	-0.0157	-0.0131
	(0.0769)	(0.0411)	(0.0624)	(0.116)	(0.0638)	(0.123)
Wealth_5	-0.0802	-0.125***	-0.186***	-0.162	0.0961	-0.196
	(0.100)	(0.0448)	(0.0679)	(0.138)	(0.0862)	(0.140)
Urban	0.0241	-0.0192	-0.0138	-0.214**	-0.00935	0.113
	(0.0535)	(0.0296)	(0.0366)	(0.0955)	(0.0414)	(0.0753)
Household size	0.0217***	0.0292***	0.0255***	-0.00976	0.0203***	0.0153
	(0.00770)	(0.00416)	(0.00773)	(0.0110)	(0.00466)	(0.0100)
Constant	0.0847	-0.415***	-0.808***	-0.153	-0.484**	-0.254
	(0.304)	(0.154)	(0.235)	(0.405)	(0.230)	(0.422)
Observations	673	2,813	1,603	326	859	560
R-squared	0.286	0.346	0.257	0.258	0.323	0.337

*Note: OLS, robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1. Reference categories: do not currently use any contraceptive methods; Lowest quintile of Wealth Index, Rural.*

FIGURE 13. THE ACTORS OF THE FERTILITY CHOICE



ers who ultimately become mothers and those who delay childbearing (Figure 13). Adolescent fertility choices also arise from internal family dynamics and the interaction with partner and peers through three main mechanisms: socioeconomic opportunities, endowments, and agency. Her socioeconomic opportunities are mostly due to her family background, while the other "non-tangible assets" (i.e. agency and values/aspirations) reflect interactions between the young women and the other three factors dependant on the institutional context.

Economic opportunities and aspirations

Empirical evidence from both developed and developing countries reveals a negative association between education and total fertility. However, it is not clear whether the negative association is a consequence of pregnancy or whether it reveals a potential risk to get pregnant. Given that by age 15-19, girls have not necessarily completed their schooling, it might be the case that the decision of dropping out of school is taken after they get pregnant or the child is born. However, it might not discard the hypothesis that being outside of school increases the probability of engaging in risky behavior, as we will further discuss in the policy section. In the absence of longitudinal data, it is complicated to disentangle the order of the events.

As noted above, the opportunity cost of childbearing is higher for more educated women (Birdsall 1988; Schultz 1993), and poor quality education might lead adolescents to believe that education cannot change their future and adjust their aspirations and expectations. Ultimately, it might reduce the cost of getting pregnant, increasing the drop-out probability.

BOX 11. FROM SUPPLY TO EFFECTIVE ACCESS IN CONTRACEPTION. EVIDENCE FROM THE QUALITATIVE STUDY IN ECUADOR

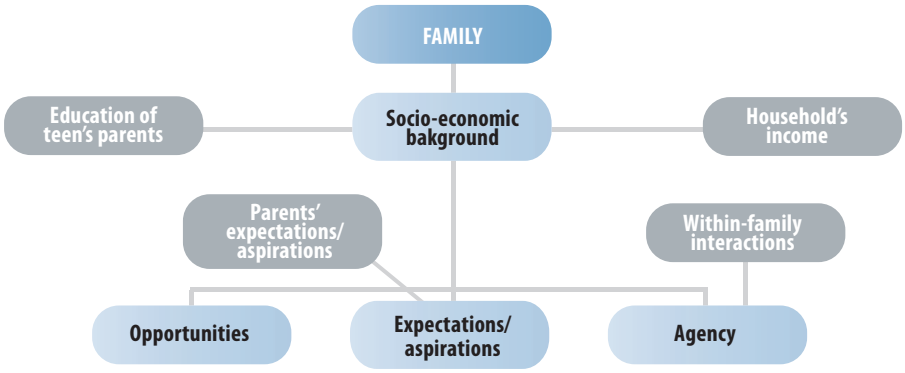
The Ecuadorian Encuesta Demográfica y de Salud Materna e Infantil (ENDEMAIN) 2004 found a strong discrepancy between knowledge of contraceptive methods (97%) and the use of those among adolescents (56%). The qualitative study in Ecuador suggests that information—and even quality information—is not sufficient to guarantee the effective use of contraception. There are additional gaps to be filled, from supply to take-off.

Besides quality information (which itself is not always available, as seen in Box 5) and supply of contraceptives, the effective use of contraceptive methods requires also the removal of barriers to effectively access them. One of the main barriers identified by adolescents in the study is shame and fear to purchase contraceptive methods: "We knew all about contraceptive methods, I knew it by heart, but I was embarrassed to go and buy it. If I had someone to guide me, or buy it for me." (Partner of a pregnant girl, 27 years, mestizo, incomplete secondary school, MB.) The same young man continues: "When you are 16 you don't go to the drugstore and ask for a condom or a preservative; that is embarrassing. I wouldn't do it. And then how would you ask to an older friend to buy it for you? He'll ask why would you buy it? Just do it without protection, it feels better. Then you do it to avoid embarrassment and don't realize the consequences and that you are entering a vicious circle." (Partner of a pregnant girl, 27 years old, mestizo, incomplete secondary school, MB.)

The personal interaction with an adult which will make it obvious to her or him that the adolescent is planning to have sexual intercourse is something they perceive as very uncomfortable. In the words of a 19-year-old pregnant girl (white-mestiza, incomplete higher education, MB): "The fear, or embarrassment, to have to go to a drugstore and buy contraceptives—because I knew, I have studied biology. But the fear and shame of having someone looking at me and saying: 'What is this little girl going to do?' That was my mistake, not being proactive to go and buy it. But even the sales people at the drugstore, they discriminate and look at you, and I said to myself: 'I better don't buy anything.'"

Participants in focus groups also mention such hindrances to access contraception: Besides shame to purchase them, teenagers express their perceptions of providers of contraceptives as reacting in a judgmental way and being reluctant to sell contraceptives to young adolescents. Additionally, some are afraid that their parents could find out about them purchasing contraceptives.

FIGURE 14. FAMILY'S SOCIOECONOMIC BACKGROUND, OPPORTUNITIES AND EXPECTATIONS



The lack of aspirations and economic opportunities is largely assumed to play a crucial role, but the limited availability of data suitable to test this as potential determinant of early pregnancy results in a lack of rigorous evidence. It is reasonable to assume that teens' expectations and their perception of general economic opportunities are influenced strongly by the education level of their parents and what their parents (especially their mothers) have achieved in the job market (Davis et al., 1993).

Some authors include the education of their mothers among the predictors of teenagers becoming pregnant. Davis et al. (1993) find that having a mother with higher education increases the probability for younger teens (15-17 years old) of getting pregnant, while the opposite occurs for older teens (18-19 years old). They argue that the mother's education might affect the two cohorts of siblings differently because it is a proxy of two different dimensions within the household relation. In the case of the youngest cohort, education might be a proxy of the level of guidance and supervision that mothers are able to provide to their daughters. Mothers with higher education are more likely to be employed and thus spend less time at home during their daughters' influential younger ages.

In the case of the older cohort, maternal education might be a proxy of the relative price of getting pregnant. Mothers with more education might create higher expectations for their daughters, whose aspirations for the future could expand under such parental influence. Given that education is usually correlated with household income and socioeconomic status, educated mothers typically have more economic resources to invest in the education of their daughters. Aspirations, expectations and economic opportunities appear strictly related.

In particular, the existence of alternatives and life choices can affect the desire for childbearing, sexual activity and contraceptive protection. A recent study by Näslund-Hadley and Binstock (2010) on a sample of teenage mothers in Peru and Paraguay examines the perceptions of teenage mothers toward childbearing and educational trajectories. The

BOX 12. THE CAPACITY TO ASPIRE: LIMITED LIFE PROJECTS. EVIDENCE FROM THE QUALITATIVE STUDY IN ECUADOR

As mentioned in the Box 6, pregnancy seems to be often due to carelessness, ´something that happened´ which reflects a lack of control of adolescents over their life projects. At the same time this indicates a certain lack of well-defined goals, aspirations and clearly-framed life projects that they are decided to stand up for and defend. The significance of the capacity to aspire as a means to increase one´s development outcomes has been highlighted by the work of Arjun Appadurai. Aspirations are formed by ideas and beliefs about life, about conceptions about what one aims to achieve in life, and about the willingness to take actions in order to achieve those goals.

The qualitative study in Ecuador shows that the majority of the pregnancies were unplanned, with most of the girls and boys seeming to let it happen. The pregnancy does not seem to interrupt careers —at least in the majority of cases. The girls and boys either go straight on with their original plans (in this case, it is mostly the mother of either one of the parents who takes care of the baby). Or, and this is the case for the majority of those interviewed for the study, there has never been a clear path towards higher education or anything similar that would have been interrupted. Thus pregnancy is simply perceived as an (accelerated) transition towards adult life.

As one of the key informants phrased it, the lack of control over their life projects is linked to a lack of opportunities: "I believe it is the lack of opportunities for young people in this country (…) neither the country or the city offers help. They can't or don't want to keep trying and don't have opportunities to go to college, or to find a good job; this kind of life doesn't offer much. Instead a son or a daughter is always a wonderful thing. In the upper class you have reasons not to get pregnant, you have to go to college, have things to do … and you protect yourself more."

study finds that school dropouts might result from early formal unions, the low quality of education offered, and generally low expectations of life. They argue that the rationality behind early planned pregnancy reflects the lack of incentives to prevent pregnancy. The absence of life goals can even lead teenagers into planning a pregnancy.

Some of them describe the pregnancy as an event that impacted negatively on the realization of their life plans. However, in the majority of those stories, it seems uncertain whether these are concrete projects or rather constitute unspecified, vague dreams. In several cases, they identify a gap between their ´dreams´ and their current situation, but they are not able to describe concrete steps that they would need to close the gap. For instance, while all respondents—teenagers and their families— when directly asked claim that education is very important, many of them do not specify how they could improve their educational status.

Girls in particular refer to their pre-pregnancy life projects as something that got quickly and entirely replaced by being a mother: "If I did not have my baby, I would have been a gynecologist. I passed the tests to get into college, my grades were high enough to go to medical school, but because I had my son and had to graduate fast, I change to paramedic, which is very close to doctor. … But anyway that's life … I say I was going to take care of sick people, and here (at home) I educate my kids. Well close enough." (Adolescent mother, 19 years old, white-mestiza, incomplete higher education, MB.)

It is very notable that the child suddenly figures into the middle of their own life project and their aspirations change in order to guarantee a good life for the child. Most of the interviewed parents prioritize employment and having an income sooner rather than investing in their own education. Adolescents do not seem to share the belief that they can really transform their own lives through education—it just does not seem equally relevant if compared to having a job for which they are immediately paid. Thus, their own personal goals and dreams have to step back to achieve the economic independence from their own parents and comply with their new responsibility and the needs of their children.

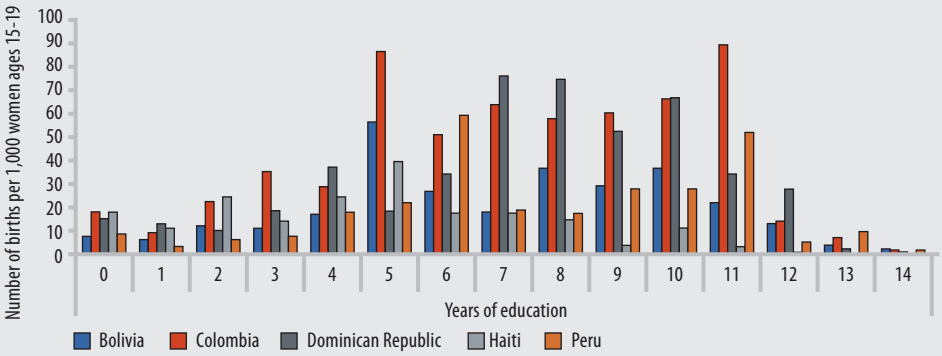
BOX 13. DROPPING OUT OF SCHOOL: CONSEQUENCE OR RISK FACTORS OF TEENAGE PREGNANCY

In most studies on teenage pregnancy, the analysis relies on education, the school drop-out rate and low attainment, in order to evaluate potential consequences of teenage pregnancy. Many investigations recognize that keeping pupils at school as long as possible might help to reduce the teenage pregnancy rate.[33] The crucial question is: Do adolescents leave school because they get pregnant, or do they get pregnant because they are out of school? We have already discussed the methodological approaches used in the literature to overcome selection bias and reverse causality problems in the studies of early childbearing consequences. In Figure 15, we provide curious empirical evidence on the subject, which once again suggests that further research is required.

Figure 15 reports the 2005 adolescent-fertility rate in Bolivia, Colombia, the Dominican Republic, Haiti and Peru by years of education. Notably, the underlying distribution of years of completed education is not smooth but rather spikes on the years when levels are finished/certificates issued, i.e. at the end of primary and secondary education. This finding is particularly remarkable for Colombia and Dominican Republic, two of the five LAC countries with the highest teenage fertility rate. In Colombia, primary and secondary education lasts five and six years, respectively (Table 7). The jump in the number of childbirths in teenagers corresponding, first with 5 and then with 11 years of education, is remarkable. In the Dominican Republic, the same happens at the end of the middle education stage, which lasts two years after six years of primary education. This evidence might either suggest that adolescents plan to get pregnant (after obtaining their primary or secondary education diploma) or that staying in school reduces the risk of getting pregnant. The risk in this second case, however, increases during the transition from one educational stage to the other.

33 See Section 4 for further details.

FIGURE 15. ADOLESCENT FERTILITY RATE BY YEAR OF EDUCATION (2005)



Source: DHS 2005. Authors' calculations.

TABLE. 7 EDUCATIONAL SYSTEM: PRIMARY AND SECONDARY EDUCATION

	Primary education		Secondary education
	Starting age	**Duration**	**Duration**
Bolivia	6	6	6
Colombia	6	5	6
Dominican Republic	6	6	2+4
Haiti	.	6	.
Peru	6	6	5

Source: WDI (2008 for Bolivia, 2009 for others countries), authors' calculations.

BOX 14. THE ADOLESCENT FERTILITY RATE IS HIGHER IN LOW-INCOME AND RURAL POPULATIONS.

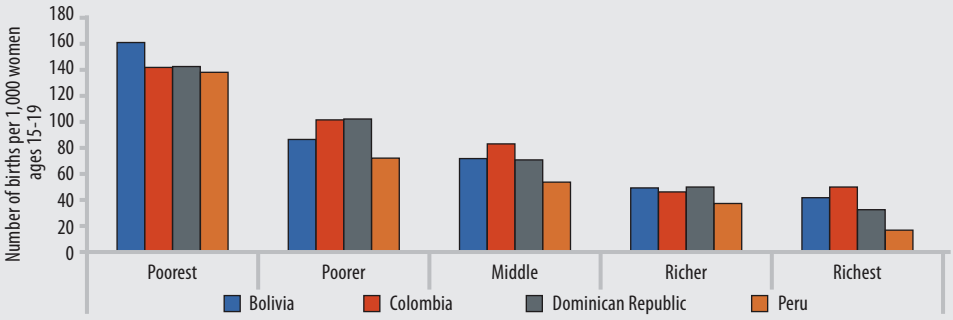
According to the 2005 DHS data for Bolivia, Colombia, the Dominican Republic and Peru, the *teenage fertility rate is higher in low-income, low education and rural populations*. Figure 16 shows that the average number of children born to women of ages between 15 and 19 is higher for the poorest (classified in quintiles using a wealth index).[34] The Dominican Republic and Colombia have the highest average for 2005, while the average rate for Colombia does not appear to differ much with the wealth classification.

The 2007 UNICEF/ECLAC study of Latin American teenage pregnancy highlights that fertility rates are much higher among poor adolescents, i.e., "specific rate of adolescent fertility of the poorest quintile is at least three times that of the richest quintile, and in many cases the ratio is 5 to 1.[35] The adolescent fertility rate for 2005 (Figure 16) is higher for the poorest women and declines over quintiles, from the poorest to the richest, in all four countries.

Looking at the fertility rate by ages for Colombia in 2010 (see Table 8), the poorer and poorest have the higher rate within all age groups.

Analyzing the data by area (rural and urban), from Figure 17, it is evident that teenage pregnancy is higher in rural areas for both 1995 and 2005. The difference between urban and rural areas across countries persists through these years, although in the Dominican

FIGURE 16. ADOLESCENT FERTILITY RATE BY QUINTILE 2005 (BIRTHS PER 1,000 WOMEN AGES 15-19)



Source: DHS 2005, authors' calculation.

34 The wealth index attempts to determine a household's relative economic status in the Demographic and Health Surveys. Almost all of the household's assets and utility services are included in the Index and it is constructed using a Principal Component Analysis (PCA).
35 UNICEF/ECLAC (2007). Page 7.

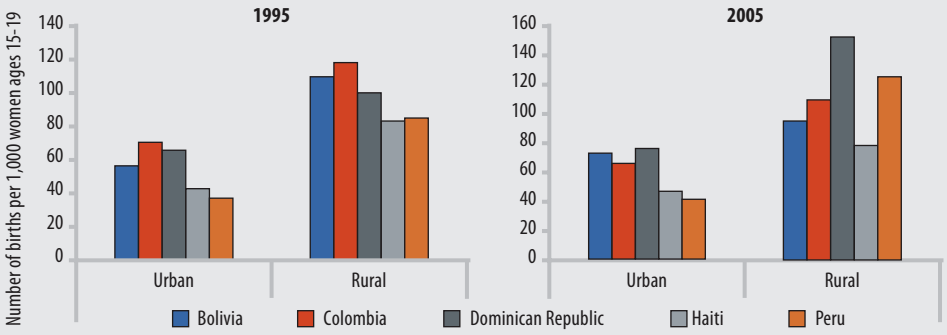
Republic and Peru the teenage fertility rate in rural areas decreases, while in Bolivia and Colombia it increases. Flórez and Núñez (2001) evidence that "while childbearing before age 18 is uncommon in urban areas, 25% to 30% of rural women 18 years old, and almost half of rural women 19 years old, are mothers in all countries.[36]

TABLE 8. ADOLESCENT FERTILITY RATE BY QUINTILE 2010 IN COLOMBIA

	Fertility Rate by Age (births per 1,000 women)				
	Age				
Quintile	**15**	**16**	**17**	**18**	**19**
Poorest	31.52	66.27	100.71	199.80	203.14
Poorer	33.42	74.02	121.50	111.25	190.98
Middle	31.73	45.68	94.45	111.38	92.06
Richer	3.95	20.11	48.79	86.38	89.95
Richest	0.00	7.58	17.64	28.00	44.41

Source: DHS, authors' calculation.

FIGURE 17. ADOLESCENT FERTILITY RATE BY AREA (BIRTHS PER 1,000 WOMEN AGES 15-19)



Source: DHS, authors' calculations.

36 Flórez and Núñez (2001). Page 9.

Endowments and agency

The family economic background might affect the sexual behavior and fertility choices of adolescents through different mechanisms. As mentioned previously, scarce family resources and poor within-family relationships might limit adolescent opportunities by reducing the relative cost of getting pregnant. Children from deprived backgrounds are more likely to have lower aspirations for their future and the attainment of salient goals. The role of aspirations for decision-making has been incorporated in theoretical micro-economic literature (Borgers and Sarin, 2000; Diecidue and Van de Ven, 2008). Aspirations-based learning has been introduced in game theory analysis (Bendor, Mookherjee and Ray, 2001). Macours and Vakis (2009) provide empirical evidence of the positive effect of increased aspirations on investment behavior. In their randomized experiment, women whose aspirations increased through communication with successful and motivated leaders were more likely to make higher human capital investments.

The complex set of mechanisms and decisions leading to teenage pregnancy and childbearing suggest that proactive attitudes are also important. The lack of a strong desire or incentives to avoid pregnancy may lead to its occurrence. As defined by Appadurai (2004), the capacity to aspire refers to the internal motivation to make a choice and the willingness to act upon it. An individual with limits on this capacity experiences internal restrictions on their development opportunities and a simultaneous lack of agency. Appadurai (2004) and Ray (2006) suggest that the lack of capacity to aspire may hinder upward mobility among the poor by preventing their investments in human capital and production technology.

The presence of external constraints, however, may limit the ability to aspire as well as cause poor outcomes. Scarce family resources, early sexual initiation, and premarital childbearing have been found to correlate with lack of agency. Scarce family resources limit family access to resources which could enhance self-confidence, fuel a sense of inferiority in the children, or cause a variety of stresses to the household (Amato and Chiltree, 1986; Alexander, 2001; McLoyd 1990; Caspi and Elder, 1988; Whitbeck et al., 1991).

The definition of agency put forth by Samman and Santos (2009) suggests that in its measurement, one should analyze (i) *existence of choice*, i.e. whether the opportunity to make a choice exists; (ii) *use of choice*, i.e. whether a person or group actually uses the opportunity to choose, and (iii) *achievement of choice*, i.e. whether the choice brings about the desired result. This approach highlights the fact that even when individuals have a proactive attitude, the "context" in which they operate may constrain their ability to transform their choices into the desired outcomes. The existence of choice is the first requisite for the manifestation of individual agency.

While the role of agency in fertility decision is widely recognized, a comprehensive indicator of agency to assess a causal relation with the observed outcome is particularly difficult to develop and measure. Agency presents a multidimensional feature (exercised in different aspects, contexts, dimensions and levels) that strongly involves social interactions and cultural norms (Samman and Santos, 2009).

Ibrahim and Alkire (2007) propose a module to define agency in its different aspects: (i) *power over*, i.e. empowerment as control intends to measure the level of control an individual has over personal decisions; (ii) *power to*, i.e. empowerment as choice intends to characterize the level of autonomy to make within-household decisions over how to spend income and choose a child's education; (iii) *power with*, i.e. empowerment in community addresses the willingness and ability to induce change in one's life by identifying the different domains in which a desire and ability exists to change something, and (iv) *power from within*, i.e. empowerment as change investigates to what extent the individual feels that he/her could change things in the community if so desired.

Given the complexity and multidimensionality of agency, many studies either use indirect measures of agency (i.e. manifestation of agency or lack of agency such as low education) or they look at one dimension of agency at a time.

Researchers suggest the following indirect measures as potential proxies of agency: (i) literacy; (ii) frequency of radio/tv listening/viewing; (iii) membership in organizations; (iv) employment history; (v) food expenditure; (vi) health status, and (vii) ownership of land or tools.[37] The WDR 2012 suggests (i) control over resources (measured by women's ability to earn and control income; and to own, use, and dispose of material assets); (ii) ability to move freely (measured by women's freedom to decide their movements and their ability to move outside their homes); (iii) decision-making over family formation (measured by women's and girls' ability to decide when and whom to marry, when and how many children to have, and when to leave a marriage); (iv) freedom from the risk of violence (measured by the prevalence of domestic violence and other forms of sexual, physical, or emotional violence), and (v) ability to have a voice in society and influence policy (measured by participation and representation in formal politics and engagement in collective action and associations).

37 According to Alkire (2008), using endowments and assets as indirect measures of agency might bias the analysis, given that assets may not translate into agency and a change in agency might be not reflected in a change in assets. In addition, looking at assets and endowments does not provide information on the pathways through which assets may increase agency. Finally, this type of approximation to agency is not substantially different from traditional poverty indicators.

Notably, fertility choice is considered an expression of agency. Fertility decisions that result from choice, rather than constraints, highlight the importance of giving adolescents the capacity to make informed decisions about their sexuality and fertility.

Since defining a unique indicator of agency is complex, most cases consider one single dimension of agency at a time. The most frequently-used indicator (that relates strictly to agency) is *the locus of control* that defines the degree to which the individual believes that she controls her own life, as opposed to its control by external forces. If her action outcomes are contingent on what she does, the girl is able to control them and thus choose her future. Otherwise the occurring events lie outside of her personal control. A strong locus of control might help girls overcome those constraints imposed by limited economic opportunity on her being more ambitious and optimistic about the future. Researchers have associated reduced chances of teenage pregnancy to the extent to which an individual believes that the achievement of targets is determined by personal initiative, i.e. internal locus of control, and not by that which is external (Connolly and McCarrey, 1978; Meyerowitz and Malev, 1973). In particular, most studies find a positive correlation between a girl's locus of control and (i) delay of her sexual initiation; (ii) reduction in her sexual promiscuity, and (iii) improvement in her use of contraceptives.

As mentioned above, agency strongly correlates with social norms. Appadurai discusses how the capacity to aspire is always grounded in culture (Appadurai, 2004, pp. 67–68). Social context and interactions (i) determine individual aspirations (Altamirano et al., 2010); (ii) constrain the space of actions, and (iii) create premiums and penalties for those who conform to or deviate from the norms (Akerlof and Kranton, 2000 and 2002). However, social norms are notoriously difficult to measure. Experimental evidence suggests that people with internal locus of control conform significantly less to what the majority dictates (Brehony and Geller, 1981).

To some extent, the capability to control the present circumstances makes planning the future easier, i.e. making effective choices that produce desired outcomes. Two essential elements are (i) autonomy, i.e. to decide according to one's own set of values and beliefs, and (ii) self-confidence, i.e. to gain respect for one's own decisions. This is particularly relevant when looking at the adolescent's interactions with her partner and peers.

The analysis of the determinants of agency and the mechanisms through which agency might affect individual choices is beyond the objective of this work. However, the sociological literature suggests that higher education increases women's empowerment and autonomy. Becoming more educated might give women greater bargaining power and autonomy regarding fertility decisions and/or the use of contraceptive methods (Mason, 1986).

BOX 15. GENDER STEREOTYPES SHAPE THE FRAMEWORK OF ACCEPTED BEHAVIOR AND ASPIRATIONS. EVIDENCE FROM THE QUALITATIVE STUDY IN ECUADOR

The Ecuador study shows that traditional gender roles and stereotypes are highly prevalent among youths—these gender roles also clearly shape their life projects and aspirations. Thus, for both girls and boys, the predominant association with being a woman is being a mother. They not only describe the home as the predominant space of the woman, but also they indicate the role of the man as a breadwinner and of the main decision-maker: "The woman has to care for the children and the man has more responsibilities than the woman because he has the economic burden at home" (18- year-old adolescent mother). Another girl puts it similarly: "The man is the leader at home; he is the one who makes decisions and sets the rules, while the woman needs to be submissive and be close to the kids and, if she wants to finish her studies, still needs to take care of the kids (19-year-old mother, 5th semester of university, MA).

Men are expected to have more responsibilities—taking care of the family members: "The man commonly makes the couple, creates a family and supports it; he has more responsibilities than the woman. He must support the kids and the wife; I see a man more responsible than a woman because he has to work and struggle to support the family" (18-year-old pregnant adolescent).

On the other hand, being a woman is strongly associated with motherhood and with the space of the home: Almost all interviews show an idealized image of the mother, of a responsible and self-sacrificing being who stands at service of her family: "Woman is being a mother—a very valuable person" (18-year-old pregnant adolescent). "When I mention the word 'woman,' what comes to your mind, what kind of images you see?" "I don't know. A mother figure?" (23-year-old woman, had her first baby as an adolescent, university student, MT).

One of the interviewed girls expressively states that career aspirations pose a challenge to, or even endanger, the fulfillment of the mother role: "I do not believe that man and woman are equal, because each one of us has different qualities both physical and spiritual and we are bound to be different; each one fulfills its role which is important and we complement each other (…) I believe that women have very much distorted their role in our society, falling into an extreme feminism that I am against (…) Women have abandoned their role as mothers, to form a well-established family, because the family is the core of society. If we run out of family society will fall. Nowadays women do not aspire to be mothers; they aspire to have careers and big jobs, but they do not realize that the careers and titles are not their legacy, but their kids are. I think that we are losing the essence of being a woman (...)" (Adolescent mother, 19 years old, white-mestiza, incomplete higher education, MTA).

Regarding the mechanisms, Näslund-Hadley and Binstock (2010) find that the younger the woman is at the start of a romantic relationship and the greater the age difference with her partner, the faster she progresses from the first date to the first sexual relations and the higher the probability of pregnancy. These findings suggest two interesting ideas. First, the ability to delay sexual intercourses is part of a woman's agency and may reflect her bargaining power within the couple. Second, the increase of women's agency might prove crucial to the reduction of teenage pregnancy, especially at early ages.

BOX 16. AGENCY AND EXTERNAL CONTROL OVER THEIR LIFE PROJECT. EVIDENCE FROM THE QUALITATIVE STUDY IN ECUADOR

Adolescence is a period in which girls and boys start to negotiate their independence from their parents and start managing their own lives. The qualitative work in Ecuador showed that the decision-making capacity and autonomy of adolescents is mediated by mainly three factors— constraining gender stereotypes (as discussed in Box 15), limited life project, and control from outside, mainly from parents and the partner.

The girls' economic and emotional dependence from their parents seem to construct significant limits to their autonomy: "I decide whom to marry and when? Of course, I have to tell my mother, to see if she agrees or not" (15-year-old pregnant adolescent, white-mestiza, incomplete secondary, MT).

This is also true for decisions regarding their children. A 23-year-old mother of two children says: "Decisions, my partner and me, from there the rest I ask my mother." *Ok, for example what decisions with your partner?* "Well when I say something, like going somewhere or to go out, or I don't want to go… simple things like that. Because more important things I ask my mom … 'Mom, should we do this or that?' … Or 'Mom, should I take Fabricio, or Karlita?' There is always something, well, no … I still don't make my own decisions by myself." (23-year-old woman who had her baby as an adolescent, university student, MT.)

Parts of this dependence from their parents is based upon them just transitioning from childhood to adulthood—but part is due to their strong economic dependence. This is reflected in their living situation: They mostly do not live on their own, but depend financially from their parents—this often times comes at the price of being dependent from their parents' opinion and judgment.

Empirical evidence from LAC indicates that younger women use fewer contraceptive methods (Box 19). Although knowledge and rationality are two key factors in the decision to have protected sexual relations, self-confidence is significant because contraceptive use requires negotiation with the partner. Salazar et al. (2005) find a significant relation between self-confidence and a set of determinants of safer sex behavior, such as perceived barriers to condom-use, peer norms and the self-efficacy of condom-use negotiation. Studies find that prior low self-confidence is predictive of subsequent reports of a range of risky behaviors, and has thus been conceptualized as a potential protective factor.

Another restriction to their autonomy is due to the gendered separation of tasks, roles and decision-making capacity in their homes. For instance, the household headship automatically transfers from the mother of the adolescent girl to her partner when she introduces him to the joint household. Thus, the young man becomes the new head of household and the main decision-maker: "My mom didn't really agree, but since she was always working and my dad was not around anymore, she saw Edwin as the head of the household." (Adolescent mother, 20 years, white-mestiza.)

Girls' agency is oftentimes additionally limited due to the asymmetries of power within the couples. Boys show that they possess more bargaining power and decision-making capacity than their girlfriends/wives. For instance, some partners monitor their girlfriends´ friendships, their mobility, and they even take decisions over their girlfriends´ careers: "Susy will study, too; after she recovers from childbirth I'll send her to study. She only finished technical school and I want her to graduate from high school. She wants to continue accounting and I'll support her, because we all have to study." (Partner of a pregnant girl, 18 years, mestizo.)

Another partner describes how he takes his girlfriend's life project into his hands—while he acts, she passively accepts his decisions: "To avoid problems I took her out of that school, I was going to enroll her in distance learning for a year, but I cannot afford it right now. But, yes, I want her to study, of course it is more important for the man because it is the man who is supposed to support the family, but it's better if it's the two of us. In my case, I don't like my wife to have to work and if she does it is in the family or she doesn't work." (Partner of adolescent mother, 21 years, Afro-descendent, complete secondary education.)

BOX 17. ADOLESCENTS ARE STARTING THEIR SEXUAL LIFE EARLIER AND DELAYING MARRIAGE

As stated previously, early sexual activity may be linked to teenage pregnancy. We use 2005 DHS and define seven age groups which identify seven different cohorts of women aged 45-49, 40-44, 35-39, 30-34, 25-29, 20-24 and 15-19. For each of them we compute the percentage of those having sexual initiation before age 15. This division by age groups allows for a time-trends analysis of the age at first sexual intercourse. Figure 18 and Figure 19 highlight that a higher percentage of women of the youngest generation (those aged 15-19 in 2005) in Colombia and Brazil have the first intercourse, respectively, before turning 15 years old, and between 15 and 19 years old with respect to the older cohorts. On the other hand, Peru shows a clear decreasing trend in the percentage of women that had early sexual relations throughout the cohorts.

Furthermore, the data shows a trend of earlier sexual activity, along with an increase in the average age at first marriage (Table 9). This severs the usual link of marriage with sexual activity.

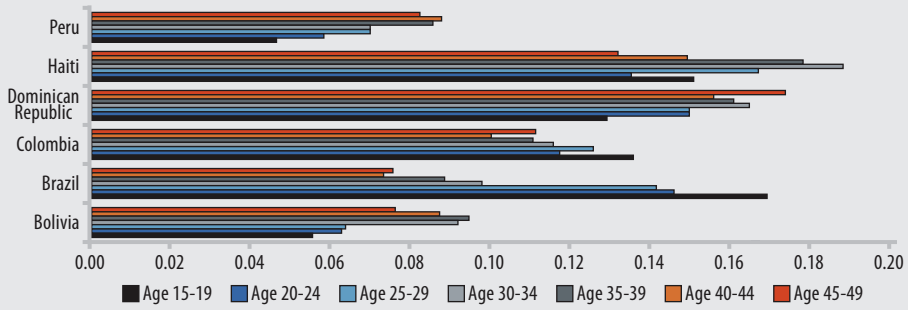
We further investigate the link between the civil status and maternal age at child birth using vital statistics from Brazil, Mexico and Colombia. More precisely, we used data from Mexico between 2008 and 2011, from Colombia between 1998 and 2007, and from Brazil between 2001 and 2009. Table 10 shows the results of the estimation of maternal age at birth, controlling for the civil status of the mother (being married, widow, divorced, being in a domestic partnership or separated) and for year-fixed and state-fixed effects, as well as maternal education and the number of pregnancies. The results of the linear regression model are reported in the first column of each country. In the second column, we report the results estimated considering only the first child.

Time trends are clearly upwards in maternal age in the case of Brazil and Mexico. Maternal age at child birth is generally increasing. Furthermore, it seems that in all countries marriages have deterrent effects on the age of mother. In other words, being married is positively correlated with maternal age. This is consistent both considering all children together or only the first birth.

This finding seems to suggest that teenage pregnancy cannot be explained by a generalized decrease of maternal age at marriage. In fact, looking—for example—at some descriptive data for Brazil, the number of births from single mothers (in vital statistics registries) have increased from 35% to 61% between 2001 to 2010, while those from those married (including domestic partnership) have dropped from 61% to 35% in the same period (Table 11).

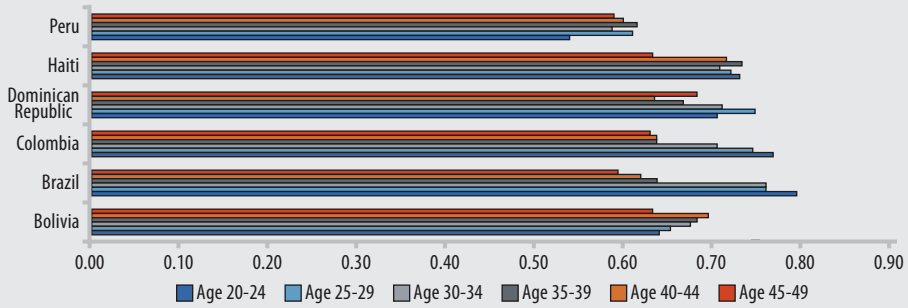
The mother's age at first birth for single mothers increases from 20 to 21 years of age in the same period, while the same indicator for married women rises from 24 to 26 (Table 12). It seems that marriage delays pregnancy, and that the age of the first child, as well as the age of first marriage, are both increasing (at least in Brazil).

FIGURE 18. PERCENTAGE OF WOMEN AMONG AGE GROUP WHO HAD FIRST INTERCOURSE BEFORE AGE 15



Source: SEDLAC and The World Bank.

FIGURE 19. PERCENTAGE OF WOMEN AMONG AGE GROUP WHO HAD FIRST INTERCOURSE BETWEEN 15-19 YEARS OF AGE



Source: DHS, authors' calculations.

TABLE 9. AVERAGE AGE AT FIRST MARRIAGE

Year (Circa)	Bolivia	Brazil	Colombia	Dominican Republic	Haiti	Peru
1990	21.58	22.06	21.27	19.97	.	21.77
1995	21.96	22.86	22.03	21.32	22.13	21.48
2000	22.37	.	21.90	20.91	22.41	21.81
2005	21.92	23.38	21.99	21.05	22.58	22.10
2010	21.39	.	22.43	21.07	.	22.36

Source: DHS, authors' calculations.

TABLE 10 CIVIL STATUS AND MATERNAL AGE AT CHILD BIRTH: BRAZIL (2001-2009), MEXICO(2008-2011) AND COLOMBIA (1998-2007)

	Maternal Age at birth					
	Brazil		Mexico		Colombia	
	All	First Child	All	First Child	All	First Child
Married	3.655*** [0.190]	3.361*** [0.131]	1896*** [0.048]	20.13*** [0.053]	3.308*** [0.139]	3.477*** [0.146]
Widowed	7.352*** [0.314]	4.835*** [0.349]	3.092*** [0.082]	3.999*** [0.207]	1.600*** [0.196]	0.728*** [0.112]
Divorced	7.435*** [0.159]	6.852*** [0.267]	1.219*** [0.072]	0.877*** [0.115]	2.086*** [0.241]	1.460*** [0.281]
Domestic partnership	0.727*** [0.043]	0.414*** [0.062]	-0.642*** [0.024]	-0.676*** [0.023]	0.514*** [0.090]	0.561*** [0.072]
Separated	. .	. .	0.716*** [0.067]	0.297** [0.096]	. .	. .
Year fixed effect	x	x	x	x	x	x
State fixed effect	x	x	x	x	x	x
Maternal education	x	x	x	x	x	x
Number of pregancy	x		x		x	
R-squared	0.147	0.244	0.369	0.155	0.423	0.222
N	7,720,313	2,439,324	7,889,913	287,841	688,495	2,451,897

*Note: *** p<0.01, ** p<0.05, *p<0.1*

TABLE 11 CHILD BIRTHS BY MATERNAL CIVIL STATUS (%), BRAZIL (2001, 2009)

	Maternal marital status at birth									
	2001	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**Total**
Single	34.97	35.27	43.82	53.25	56.80	59.59	60.55	61.38	62.36	51.74
Married	40.39	38.45	38.04	38.00	36.71	35.49	34.49	34.57	33.78	36.71
Widowed	0.32	0.30	0.29	0.28	0.27	0.25	0.24	0.24	0.23	0.27
Separated	0.72	0.72	0.76	0.84	0.87	0.89	0.91	0.93	0.98	0.84
Domestic partnership	21.55	21.89	15.03	5.60	3.52	2.18	1.58	1.46	1.37	8.43
Missing information	2.05	3.37	2.07	2.03	1.83	1.59	2.23	1.42	1.30	2.00
Total	100	100	100	100	100	100	100	100	100	100

TABLE 12 MATERNAL AGE AT THE TIME OF CHILD BIRTH BY MATERNAL CIVIL STATUS: BRAZIL (2001, 2009)

	Maternal age at the time first child born									
	2001	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**Total**
Single	20.32 340,074	20.33 321,025	20.51 393,416	20.62 492,045	20.69 527,766	20.82 576,698	20.93 607,444	21.07 646,204	21.17 666,201	20.79 4,570,873
Married	24.08 334,749	24.30 305,163	24.61 315,186	24.76 331,797	24.92 327,985	25.24 343,487	25.46 343,958	25.77 365,975	26.09 362,282	25.06 3,030,582
Widowed	24.35 1,195	24.40 1,015	24.56 988	25.11 1,030	25.38 982	26.65 887	26.87 856	26.84 1,016	26.79 928	25.59 8,897
Separated	27.91 2,609	27.74 2,381	28.13 2,833	28.35 3,463	28.86 3,655	29.34 3,947	29.86 4,093	30.00 4,640	29.90 5,107	29.09 32,728
Domestic Partnership	20.42 172,542	20.51 169,473	20.64 120,663	20.98 53,961	21.23 33,213	21.35 20,615	21.02 15,262	21.05 15,316	20.99 14,051	20.65 615,096
Missing Information	22.18 9,493	21.14 13,880	21.80 11,602	21.46 11,385	21.54 11,287	21.80 11,645	21.80 11,213	21.77 9,474	21.88 9,693	21.68 99,672
Total	21.85 860,662	21.90 812,937	22.11 844,688	22.23 893,681	22.29 904,888	22.47 957,279	22.57 982,826	22.77 1,042,625	22.91 1,058,262	22.37 8,357,848

BOX 18. PROS AND CONS OF VITAL STATISTICS

Administrative data are generally an underutilized resource, although several recent studies illustrate their potential usefulness. Vital statistics registering births and deaths in a certain time, and for the entire population and by maternal age groups, might be a way to address some of the difficulties with the existing literature on teenage pregnancy.

The main advantages of vital statistics include representativeness and the large sample size. Indeed, vital statistics are comprehensive. The large sample size is particularly helpful in the study of teenage pregnancy, since childbearing during adolescence is a rare event. Moreover, it allows imputing missing data, using information for other units in the population or matching with data from other sources. Furthermore, the lengthy time span of the data constitutes another important advantage and allows identification of time trends and distinguishes between time-variant and permanent events.

There are two main limitations of vital statistics. The first is that they provide a relatively limited number of variables about factors that are not of interest to the administrators collecting the data. However, the main problem that might discourage the use of vital statistics is that they are not often readily available, even if efforts to make them accessible have increased in the last years.

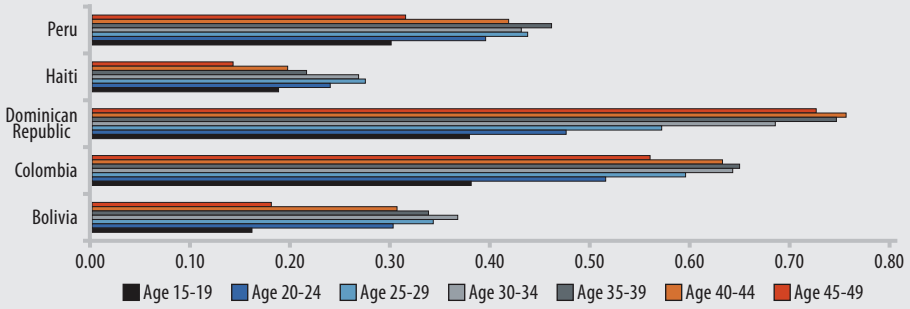
BOX 19. ADOLESCENTS ARE LESS LIKELY TO USE CONTRACEPTIVE METHODS

According to the 2005 DHS data for different cohorts of women in Bolivia, Colombia, Dominican Republic, Haiti and Peru, younger women use fewer contraceptive methods (Figure 20).[38] Women in Bolivia and Haiti have the lowest levels of use.

We exclude from our analysis those women who have never had sex. Strictly speaking, however, "contraceptive prevalence" in the health literature is measured among women married or living in union. The statistics presented in this box are in line with Millennium Development Goals and other sources tracking contraceptive prevalence.

As previously mentioned, the 2007 UNICEF/ECLAC study on Latin America teenage pregnancy reports that the increase in contraceptive use has not necessarily translated into a reduction in teenage fertility. The drop in the age of the first sexual activity is suggested as a possible explanation. The analysis carried out with DHS between 1990 and 2002 highlights the puzzle of increasing education and the availability of contraception alongside *increasing* teenage pregnancy. This suggests that sexual intercourse is occurring at younger ages. Knowing about a method does not necessarily ensure its proper use, which could increase the likelihood of pregnancy for the newly sexually active.[39]

FIGURE 20. PERCENTAGE OF WOMEN THAT CURRENTLY USE CONTRACEPTIVE METHODS BY AGE GROUP (2005)



Note: Current use of contraceptive methods includes only modern ones, excluding traditional and folkloric methods.
Source: DHS, authors' calculations.

38 Constructed by DHS, it includes only those women who currently use modern methods and excludes those using traditional and folkloric methods.
39 "Lack of knowledge or skill in using contraceptives is a prime cause of method failure among young people. Consequently, adolescents are more likely than adults to experience accidental pregnancies during their first year of contraceptive use" (Alan Guttmacher Institute, 1998). Flórez and Núñez (2001), page 16.

2.2.3 Teenage pregnancy in Ecuador: Risk factor analysis

As noted above, "non-tangible assets" such as agency, self-esteem, aspirations, and social norms may play an important role for adolescent sexual behavior and teenage pregnancy. In the exercise below, we try to include many of these intangible assets. While this analysis does not seek to establish causality, it allows identifying some interesting correlations. The data used have been collected comes from the study conducted in Ecuador (see Box 1) and includes about 1,200 boys and girls between 15 and 19 years old living in Quito and Guayaquil. About 17 percent of adolescents in the study are pregnant or have already a baby. Among them, about 8 percent are teenage fathers.

We estimated the likelihood to be teenage parents through a linear probability model. A positive and significant correlation at 90, 95 or 99 confidence level is indicated by the bold plus sign. The sign that is reported in the color grey indicates that the coefficients are not statistically significant. The format indicates that the coefficients are significant at the 90, 95 or 99 confidence levels.

In the first specification, we include some basic demographic characteristics (age, gender and marital status) and some indicators of adolescent's soft-skills and values. We only report the direction of the associations studied and include an indicator for self-esteem[40]; autonomy in decisions (measuring how much the adolescent is free to decide about many aspects of her/his life, such as going to university and daily life, such as what to wear), and self-efficacy (measuring how much she/he feels able to make her/his partner use contraceptives), an indicator for how much her/his vision about gender roles[41] and sexual behavior is stereotyped[42] (or in other words, identify a "macho attitude").

We allow for nonlinearity in self-esteem and the indicator for autonomy by controlling for the squared-term of self-esteem and comparing adolescents with high autonomy levels (in the two top quantiles of the autonomy indicator) and those with low levels of autonomy (i.e. those adolescents for which the indicator is below the median). The nonlinearity

40 Self esteem is computed summing up the answer to the following questions and taking a value between 0 (completely disagree) and 3 (completely agree): "In general I am satisfied with myself;" "Sometimes I think I am not good at all;" "I believe myself to have some good qualities;" "I believe I am able to do the same things that the other people do;" "I don't think that I have many things to be proud of;" "Sometimes I feel useless;" "I think I have the same value as the others;" "I think I am a failure," and "I have a positive attitude about myself."

41 The indicator for having a gender role-stereotyped vision is based on questions such as: "The man is the one who as to work;" "The woman is the one responsible to protect during sexual relations;" "Men cannot cry;" "University is more important for men than for women," or "A women has to be in a stable relationship to have sex." The highest the score is, the most gender roles are stereotyped.

42 The indicator for having a stereotyped vision about sex is computed using questions such as: "If I use condoms my partner is going to doubt my fidelity;" "Most of men do not like to use condoms;" "loose virginity for women is a proof of her love," or "I feel ashamed to buy contraceptives." The higher the score, the most she/he has a stereotyped vision about sex.

TABLE 13. LIKELIHOOD TO BE MOTHER/FATHER OR PREGNANT AS ADOLESCENTS. ANALYSIS OF RISK FACTORS USING DATA FROM THE STUDY IN ECUADOR

	Likelihood to be mother/father or pregnant as adolescents			
	(1)	(2)	(3)	(4)
Demographic characteristics				
Age (years)	+	+	+	+
Gender (Male)	-	-	-	-
Married	+	+	+	+
Social norms				
Stereotyped Gender Roles (0-36)	+	+	+	+
Sexual stereotypes (0-36)	+	+	+	+
Agency and Self-esteem				
Self Esteem (0-27)	-	-	-	-
Self Esteem (0-27): Squared term	+	+	-	-
Decision autonomy: 50-75th quantile	+	+	+	+
Decision autonomy: 75-100th quantile	+	+	+	+
Self-efficacy: Making the partner use the contraceptive	-	-	-	-
Parents and child's relationship				
Living at least with one of the parents		-	-	-
Quality of relation with parents and siblings (0-1)		-	+	-
Psychological & physical violence among parents		-	-	-
Parents' value: Ideal age to get married		-	-	+
Peers effect: Know at least one adolescent mother/father		+	+	+
Contraceptive use and Info				
No regularly use of contraceptive			+	+
First sexual intercourse: Contraceptive used			-	-
Socio-economic status				-
Ethnicity: White				-
Parents education: Secondary				-
Parents education: Post-secondary				-
Household's assets				-
Own the house				-
Household size				+
Observations	**1022**	**973**	**478**	**464**

Source: authors' data and calculations.

of self-esteem can be theoretically explained by the discordant effect of self-esteem on an adolescent's sexual outcomes, depending on the level of self-esteem achieved. Children with high self-esteem are healthy and more prudent adolescents in term of sexual attitude. In this sense, self-esteem acts as a protecting resource. The second hypothesis is that extremely high or low levels of self-esteem may act as risk enhancing factors.

Consistent to what expected, being a women and being married are positively correlated with the likelihood to be a mother. Interestingly, those adolescents with a more stereotyped view about gender roles and sexual relationship are at higher risk of becoming parents during adolescence. Conversely, being able to make decisions is positively associated with the probability of being teenage parents. However, we are not able to say if a high autonomy level might be a potential cause or consequences of being teenage parents. It might be the effects of the new responsibility they have as a consequence of the childbirth or it might indicate a low control over their life as a risk factor of getting pregnant. Finally, self-esteem and self-efficacy does not seem to have any statistically significant effects, even if negatively correlated with the dependent variable.

In the second specification we include some variables capturing the quality of the environment where they live. The risk of getting pregnant or having a baby during adolescence is higher among those who are living with only one parent. Moreover, the age their parents believe as ideal to have a baby is negatively correlated with the probability of getting pregnant or being a mother as adolescents. This variable might be considered as a proxy of parents' expectations and of the general quality of the domestic environments where they live. Remarkably, teenage parents are more likely to have friends who are teenage parents themselves or who experienced early pregnancy and childbearing as adolescents. Being in contact with other teenage mothers might reduce the cost or stigmas associated with getting pregnant and having a baby during adolescence.

In the third specification, we includes some variables related to the use of contraceptives during "normal" sexual activity and/or the first time they have sex. As expected, the risks of getting pregnant increase among for those adolescents admitting to not having regularly used contraceptive.

Finally, when we control for the socioeconomic status of the adolescence, most of the variables found to be significantly correlated with the risk of getting pregnant during adolescence do not become not significant. The socio-economic status and, in particular, parental education are picking up most of the heterogeneity.

3. ON THE CONSEQUENCES OF EARLY CHILD BEARING

Research on the consequences of adolescent childbearing in developing countries is scarce. In developed nations, a large body of literature (particularly from the United States) has documented the negative effect of teenage childbearing on mothers and children.[43] Most studies nevertheless mainly describe associations. Individual unobservable characteristics (i.e., preferences, motivations and abilities) make pregnancy more likely, while simultaneously affecting the relevant outcome. Isolating the "pure" effect of the early childbearing event from the effect of confounding factors and those unobservable individual characteristics can be difficult.

The gender dimensions of this issue are obvious across all sections. The descriptive evidence points to higher educational and labor market costs for girls than for boys (PAHO, 2008). Going beyond the observed differential effect on educational achievement, evidence from several countries suggests that the majority of teenage mothers do not marry the fathers of their children. In the U.S, eight out of 10 teenage fathers do not marry the mother of their child.[44] This dynamic creates an additional challenge for these teenage girls who either (i) impose a cost on their parents by remaining at home or (ii) assume the role of female head of household, which increases the probability of binding intergenerational poverty traps and further aggravates the unequal opportunities for young women.

Due to data limitation and the general scarcity of long-panel data for developing countries (particularly in LAC), most of the consequences are measured in the short-to-medium term. Given that the region is plagued by persistent poverty and bears one of the highest incidences of teenage pregnancy in the world, however, it is particularly relevant to answer the following question: Does early childbearing contribute to the perpetuation of poverty?

43 See Table A3 in the Appendix for a complete literature review of the consequences of teenage pregnancy and early childbearing.
44 Reports, The US National Campaign to Prevent Teen and Unplanned Pregnancy.

3.1 ALL THE ACTORS INVOLVED MAY BE AFFECTED

A large part of the literature on teenage pregnancy has focused mainly on the consequences for the mother. However, a teen pregnancy in the household might have potential long-term effects on the child, the partner who fathered it, the parents of the mother (through an income shock and reduction in consumption if the woman and child remain in their household) and the siblings of the pregnant woman, due to natural competition for fixed resources within the household. Indeed, few studies recognize and analyze rigorously the effect on the existing household members, including those on their income-earning opportunities or on the labor force participation of young fathers. Research has not effectively documented either effect in the region.

This section provides new evidence on the consequences of teenage pregnancy found in LAC as part of the regional study and contextualizes it in reference to previous studies in LAC and in other countries where evidence is more abundant.

3.1.1 Consequences for the mother

A large body of literature shows that early childbearing can affect various dimensions of the mother's economic opportunities, such as education, earnings, labor participation and her prospect on the marriage market. General LAC evidence suggests that in most cases teenage pregnancy correlates negatively with each of these socioeconomic outcomes. For example, Buvinic (1998) use data from Chile, Barbados, Guatemala and Mexico to show that adolescent mothers are more likely to live in poverty. Early childbearing relates to reduced monthly earnings and the nutritional status of the child. The authors include in their regression models a set of retrospective information on the background and living situation of the teenage mother in order to alleviate potential endogenous selection problems and confounding effects.

Studies on the consequences of teenage motherhood, however, are often unable to ascertain causality. Failure to account for systematic differences in unobservable characteristics between teen mothers and those teens that do not bear children might lead to an overestimation of its effect or a misunderstanding of the true issues behind the development of the poor mother. Results on the effect of teenage childbearing on the outcomes of mothers and children are thus sensitive to the methodological approach employed. Empirical evidence suggests that the standard OLS and natural experiment approaches offer, respectively, an upper and a lower boundary of the overall effect. Propensity-score-matching approaches usually provide intermediate results based on their ability to control for (observable) confounding factors. Another approach is the within-family fixed effects that compare teen mothers with sisters (or in some cases cousins) who timed their births

at different stages. This approach allows control for unmeasured environmental factors (Geronimus and Korenman, 1992 and 1993; Hoffman et al., 1993; Rosenzweig and Wolpin, 1995) and usually estimates a smaller negative effect of teen motherhood than the propensity-score matching. This regional study involved the preparation of three studies to estimate the effect of adolescent motherhood on maternal educational performance and labor market participation, using all three methodological approaches cited above (Azevedo et al., 2012; Kruger and Berthelon, 2012; Arceo-Gomez and Campos Vazquez, 2011). The results are summarized in Table 14.

Azevedo et al. (2012) identified the impact of childbearing among teenagers who become pregnant using miscarriages as a natural experiment. Not uncommon during pregnancy, miscarriages present a methodologically-advantageous characteristic. They do not relate substantially to either the demographic condition of the mother or to the characteristics that impact adult outcomes, such as education and income (Lang, 2007). They use the 2006 round of the Mexican Survey of Demographic Dynamics (ENADID), which records not only the birth histories of its respondents but also their miscarriage and abortion histories. It is very important to stress that this approach allows an estimation of the cost of early childbearing conditional on being pregnant. It does not provide information on how the life trajectory of a woman with a low probability of teen pregnancy would have evolved if she had randomly undertaken the task of raising a child during her adolescence.

As earlier confirmed by the analysis by Azevedo et al. (2012) for Mexico, women who become pregnant as teenagers differ from women who delay childbearing along a number of important dimensions. Women more likely to experience an adolescent pregnancy experience lower educational and economic opportunities regardless of their fertility decisions, so that their opportunity cost of childbearing is relatively lower. Their approach circumvents the issue of selection bias and compares similar samples of teenage pregnant mothers, where miscarriage is likely to be a randomly-distributed event, or at least uncorrelated with the fertility decision.[45]

Consistent with findings for the US, the study does not find negative consequences in economic indicators, such as employment and education, for the mothers who as teenagers bear a child. According to the results, women who gave birth during their adolescence have, on average, 0.34 more years of education and are 21 percentage points more likely to be employed, compared to counterparts who miscarried. Women who gave birth during adolescence, however, are more likely to participate in social programs and depend on

45 They exclude women who experienced more than one miscarriage, as repeat miscarriages may not be random and are likely to be associated with poor health status and other characteristics which may affect the outcomes (Wang et al., 2003).

social-assistance income.[46] This suggests that even if teenage childbearing does not generate an individual cost or other negative consequences for the mother, it does represent a cost for society. The fact that they are more likely to be employed, on the other hand, could be related to the fact that they "cannot afford" not to be employed.

Conversely, other evidence from Mexico suggests that becoming pregnant during adolescence has negative effects on the opportunities of the mother. Arceo-Gomez and Campos Vazquez (2011) find that teenage pregnancy decreases years of schooling (by 0.6-0.8 years), lowers school attendance and reduces work hours. Contrary to Azevedo et al. (2012), who estimate the cost of early childbearing conditional on being pregnant using a natural experiment approach, this study uses a propensity- score matching technique to estimate the cost of adolescent childbearing by comparing teen mothers to adolescents who delayed childbearing. In addition to the negative effect on education and labor outcomes, they find significant negative effects on the marriage market opportunities of teen mothers. In the short run, pregnant teenagers have higher marriage rates than those who are not. In the long run, however, they have a higher probability of being separated or divorced.

Kruger and Berthelon (2012) conducted the last study using nine rounds of Chilean household surveys (1990-2009) to determine that adolescent fertility is the most important determinant of dropping out of high school. They estimate propensity-score matching and fixed-family effects for a large sub-sample of sisters to control for selection bias and unobservable characteristics at the household and municipality levels.

Their findings indicate that teenage motherhood significantly reduces the probability of high school completion. Indeed, propensity-score matching estimates suggest that women who gave birth as teens have one less year of schooling, are 34% less likely to graduate from high school, and are 49% less likely to enroll in post-secondary education compared to women of similar observable characteristics who did not have a teen birth. However, once they control for unobservable characteristics at the household level, the negative consequences of teen childbearing reduce dramatically. A teenage girl who experiences pregnancy is 18% less likely to graduate from high school and 32% less likely to enroll in post-secondary schooling than a sister who does not.

These three studies suggest that controlling for selection bias is crucial to an accurate portrait of the consequences of teenage pregnancy. Controlling for differences in observ-

46 Furthermore, the data indicate that dependence on social welfare among teenage mothers is higher in the settings characterized by worse labor market and economic opportunities (captured in an indicator of underemployment).

TABLE 14. CONSEQUENCES OF TEENAGE PREGNANCY ON TEEN MOTHER'S WEALTH: EVIDENCES FROM LAC

Paper		Outcomes	Results	Sample	Ref. group	Country	Data	Method
Azevedo et al.(2012)	The causal effect of having a child conditional on being pregnant	Years of education	0.34	Women (aged 19 to 30) who experienced a pregnancy before 19	Women (aged 19 to 30) who had ever experienced a pregnancy	Mexico	ENADID	Natural experiment
		Being employed	0.21					
		Married/partner /Single	No effect					
		Hours of work	No effect					
		Social assistance income	0.36					
		Participation in Oportunidades	0.14					
Arceo-Gomez and Campos Vazquez (2012)	Short run effects	Years of education	-0.6/-0.8	Women who had a child between 15-19 years old	Comparable women who were not teen mothers	Mexico	MxFLS, EMOVI	PSM
		Drop out of school	-0.27/-0.33					
		Being employed	No effect					
		Married	0.61					
		Hours of work	-8.8/-9.9					
	Long-run effects	Years of education	-1.07/-1.16					
		Being employed	-0.043					
		Married	0.05					
Kruger and Berthelon (2012)	The causal effect of having a teen child-bearing	Years of education	-0.5/-1	Teen mothers, aged15-19	Observably comparable women who were not teen mothers	Chile	Chilean house-hold surveys	PSM, fixed effect
		Drop out of school	0.18/0.34					
		Enroll in post-secondary educa-tion	-0.32/-0.49					

able characteristics between teen mothers and comparable teenagers, as in the case of the propensity-score matching approach, might still overestimate the effect of teen pregnancy. In fact, differences in unobservable characteristics that could affect both the fertility decision and the observed outcomes (such as aspiration, attitudes, expectations and preferences) might still bias the results. Notably, these results are in line with previous evidence from developed countries (see Box 19), confirming that when the model used is effective in controlling for confounding factors, the negative effects attributed to teenage motherhood reduce significantly.

Besides differences in the methodological approach, the different results of the three papers might be explained as well as due to differences in characteristics across the three samples of adolescents. For example, the three samples appear substantially different in various dimensions; in particular the sample in Azevedo et al. (2012) is significantly differ-

TABLE 15. COMPARING THE CHARACTERISTICS OF THE THREE SAMPLES OF ADOLESCENTS IN THE KRUGER AND BERTHELON (2012), AZEVEDO ET AL. (2012) AND ARCEO AND CAMPOS (2012)

	Azevedo et al. (1)		Arceo & Campos (2)		Kruger & Berthelon (3)	
	Gave birth	Control group	MxFLS	EMOVI	Treated (were teen moms)	Untreated (not teen moms)
Demographic charatheristics						
Age	24.45	24.54	15.80	39.90	.	.
Rural/Urban	0.10	0.08	0.27	0.23	0.34	0.31
Education (teen mother)						
Years of education	7.55	6.89	8.00	6.80	10.14	11.98
Employment (teen mother)						
Is currently employed	0.19	0.27	0.20	0.44	0.36	0.37
Log of labor income	10.09	10.19	.	.	11.32	11.48
Marital status/living status						
Is married	0.53	0.51	0.00	0.67	0.14	0.04
Has a partner	0.81	0.83	.	.	0.11	0.02
Is single	0.09	0.08	.	0.17	0.67	0.93
Living with parents	0.22	0.20	1.00	.	1.00	1.00
Household characteristics						
Size & composition						
Household size	5.11	5.64	5.70	4.10	5.98	4.93
Income/Wealth						
Number of rooms in the household	3.28	3.20	2.50	2.10	.	.
Number of persons/ bedroom	0.40	0.36	0.46	0.58	2.29	1.81
Head of the households characteristics						
Gender	.	.	0.17	.	0.28	0.21
Years of education	.	.	5.80	.	6.51	7.91

ent from the other two samples. The adolescents in this sample are on average (i) older; (ii) more likely to live in rural areas; (iii) have less education (despite being older); (iv) are less likely to be single; (v) are less likely to be currently employed, and (vi) have low labor income (than sample 3). Only 20 percent still live with their parents. There are also differences in sampling across the three studies. For example, sample three includes only women aged 20-24 that live with their parents.

This exercise results in being very useful mainly because it allows identification and measures to what extent models trying ascertain casual relations between teenage motherhood and future outcomes are sensitive to methodological issues. Furthermore, it allows moving a step further in identifying causality. However, the three papers do not give us a comprehensive picture of the potential negative effect of teenage motherhood for various reasons we discuss below.

First, one of the limitations of the three papers common to similar studies is that they estimate the cost of early childbearing vis-à-vis the cost of teen pregnancy. Abortion is illegal in most LAC countries (Box 10). The lack of abortion data does not allow for its analysis as one of the possible fertility-decision choices in a region where unsafe abortion practices are widespread, especially for young mothers.

Second, they do not consider that teenage pregnancy is associated to a higher risk of maternal mortality, fetal death, infant mortality (Box 21 and Box 23) and suicide (Box 22). Furthermore, the medical literature suggests that adolescent pregnancy relates to an increased incidence of several adverse maternal and perinatal outcomes. The study by Conde-Agudelo et al. (2005) for 854,377 Latin American women younger than 25 years (1985-2003) finds several adverse consequences of teenage pregnancy for the health of the mother and the child. These risks include a higher danger of postpartum hemorrhage, puerperal endometritis, operative vaginal delivery, episiotomy, low birth weight, preterm delivery, and small-for-gestational-age infants. The consequences are stronger for the youngest sample of mothers (aged 15 years or younger), who were found to have higher risk of maternal death, early neonatal death, and anemia compared to a sample of women aged 20 to 24. Similarly, Cheery et al. (2001) show that pregnant girls between age 15 and 19 are twice as likely to die at childbirth as pregnant women older than 20 years of age. In another study, Chen et al. (2006) look at 3,886,364 pregnant women who are 25 years of age or younger in the United States (during 1995 and 2000). The authors found that "all teenage groups were associated with increased risks for pre-term delivery, low birth weight and neonatal mortality".[47]

47 Chen, X. Wen, S. Fleming, N., Demissie, K., Rhoads, G. and Walker, M. (2006). Page. 368.

Analogous to the Acevedo et al. (2012) study in Mexico, Hotz et. al (2005) study the consequences of teenage motherhood in the United States using the 1979 National Longitudinal Survey of Youth. They adopt a natural experiment approach using miscarriages as an instrumental variable. They find that teenage mothers are less likely to receive a high school diploma but are more likely to receive a General Educational Development degree (GED). They work more hours and have higher earnings over their adult lives. They conclude that the apparent negative consequences previously attributed to teenage childbearing appear to be the result of the failure to account for other confounding or unobservable factors.

Conversely, Ashcraft and Lang (2006) find adverse but modest effects. According to their findings, teen mothers present fewer years of schooling and are less likely to complete high school. The authors control for both observable and unobservable selection biases through an instrumental approach that uses miscarriages. They also take into account the possibility that women might experience a miscarriage as a consequence of an induced abortion.

One of the studies attempting to control for unobservable characteristics at the household level refers to the paper by Geronimus and Korenman (1992). They estimate the effect of adolescent childbearing by comparing the income outcome of sisters in the U.S. They find little difference between the income of the teen mother and her sister who did not give birth as an adolescent.

The within-family fixed effects approach has also been used by Holmlund (2005) to estimate the long-run consequences of teen motherhood. The author uses data on biological sisters in Sweden to compare a Swedish woman who became an adolescent mother with her sister who either had a baby later in life or did not have a child at all. She finds a penalty for teenage motherhood in years of education that is surprising in a country with such a welfare state. Controlling for between-sister heterogeneity can reduce the negative effect of teenage motherhood.

Ribar (1994) estimates a simultaneous discrete-choice model of adolescent fertility and high school completion in the United States using three different exogenous sources of variation: the age at menarche, the availability of obstetrician/gynecologists, and the local abortion rate. The author finds no negative effect of teenage childbearing on high school completion. He concludes that a common set of antecedents confounds teen parenthood and school dropout and that the failure to account for the initial background leads to an overestimate of the consequences of teenage pregnancy.

TABLE. 16 CONSEQUENCES OF TEENAGE PREGNANCY ON TEEN MOTHER'S WEALTH: EVIDENCE FROM OTHER COUNTRIES

Paper	Outcomes	Country	Data
Propensity Score Matching			
Levine and Painter (2003)	20% lower likelihood of graduation from high school	US	National Survey of Family Growth
Chevalier and Viitanen (2003)	Adverse effects on schooling, labor market experience and wages	UK	National Child Development Study
Natural experiment approach			
Hotz et. al (2005)	No negative effect of teenage childbearing and positive effects on getting GED, hours of work and wage.	US	"National Longitudinal Survey
National Longitudinal Survey of Youth, 1979"	Moderate penalty to teenage motherhood in terms of years of education.	Sweden	Statistics Sweden
Ashcraft and Lang (2006)	Adverse, but modest effects on educational outcome, income, marital status, labor market outcomes	US	1995 National Survey of Family Growth
Ribar (1994)	No negative effect of teenage childbearing on high school completion		National Longitudinal Survey of Youth
Fixed effect approach			
Geronimus and Korenman (1992)	Little difference in income between the sister who gave birth in adolescence and the sister who did not	US	National Longitudinal Survey Young Women's Sample; the Panel Study of Income Dynamics, National Longitudinal Survey Youth Sample (NLSY).
Homlund (2005)	Moderate penalty to teenage motherhood in terms of years of education.	Sweden	Statistics Sweden

BOX 21. MATERNAL DEATH AND TEENAGE PREGNANCY

Maternal death is defined by the World Health Organization (WHO, 1992) as "the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration or site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management, but not from accidental causes."[48]

The 2007 UNICEF/ECLAC Latin America study reports that adolescent pregnancy has higher health risks, especially perinatal risks, i.e., "at all socioeconomic levels, reproduction in adolescence is linked to higher probabilities of fetal death, infant mortality and morbidity, and obstetric problems in the postpartum period. The greatest risks come with under-18 pregnancies as the reproductive system appears to reach full maturity at this age (18)."[49]

A 2008 WHO report stresses that adolescent girls who give birth are at a higher risk of dying from maternal causes than older women. Newborns of adolescents also face a significantly higher risk of death compared to babies born to older women.

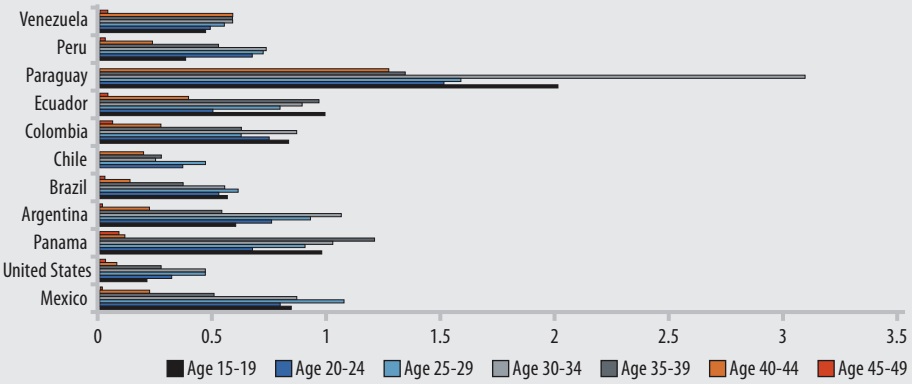
The association of maternal death and neonatal mortality with teenage pregnancy remains controversial because many other counfounding factors (such as the social context or the adolescent's biological immaturity) may determine those events (Cunnington, 2001). The 2008 WHO report states that although the risk of teenage pregnancy "can be [partly] attributed to factors other than young age, e.g. giving birth for the first time, lack of access to care, or socioeconomic status, there appears to be an independent effect of young maternal age on pregnancy risk to the mother. Conditions associating adolescent childbearing and maternal health problems include obesity, anemia, malaria, STIs, mental illness, unsafe abortion complications, and obstetric fistula. Accounting for about 11% of all births worldwide, maternal conditions in adolescents cause 13% of all deaths and 23% of all disability adjusted life years."

In Figure 21 we show the percentage of maternal deaths to total deaths by age group using data from the mortality database of the Pan-American Health Organization (PAHO)[50]. The figure shows a higher percentage of maternal deaths over total deaths for women of age 15-19 in Colombia, Brazil, Ecuador, Mexico and Paraguay, which are also countries with high teenage pregnancy (Figure 21).

Given that women aged 15-19 are less likely to die from other causes, however, the maternal mortality rate for this group might appear to be higher than for other age groups even if the risk of maternal death is the same across age groups. Conversely, the lower maternal mortality rate for the oldest group might be due to both the relatively higher risks of other causes of death and their lower fertility rate, rather than due to a lower risk of maternal mortality.

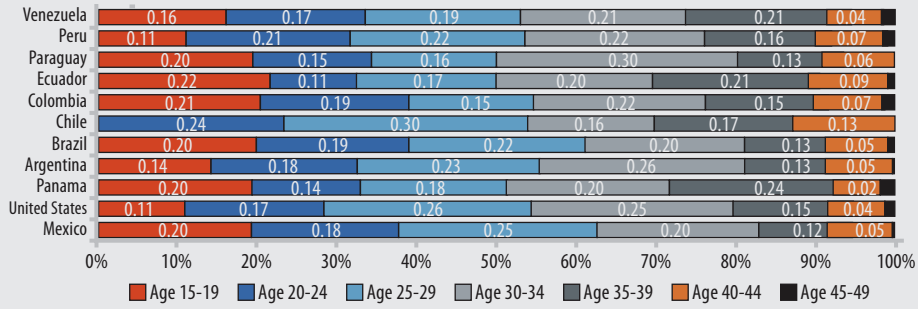
48 International Statistical Classification of Diseases and Related Health Problems (ICD-10). The ICD-10 introduced a new category, late maternal death, that is defined as "the death of a woman from direct or indirect obstetric causes more than 42 days but less than one year after termination of pregnancy."
49 UNICEF/ECLAC (2007). Page 6.
50 We thank Fatima Marhino and Regilo Souza from PAHO for sharing the information with us.

FIGURE 21. PERCENTAGE OF MATERNAL DEATHS TO TOTAL DEATHS, BY AGE GROUP (2007)



Note: Includes only ICD "Pregnancy, childbirth and the puerperium" (000-099) classification deaths. Other suspected maternal deaths are no included. Source: PAHO, Mortality Data, authors' calculations.

FIGURE 22. PERCENTAGE OF MATERNAL DEATH FOR EACH AGE GROUP TO TOTAL MATERNAL MORTALITY (2007)



Source: PAHO, Mortality Data, authors' calculations.

FERTILITY RATE (%) FOR 15-19 AGE GROUP

Venezuela	0.09	Colombia	0.07	Panama	0.08
Peru	0.05	Chile	0.06	US	0.04
Paraguay	0.07	Brazil	0.08	Mexico	0.07
Ecuador	0.08	Argentina	0.06		

In an attempt to take into consideration that the youngest age group has a lower risk of death than the older age group regardless of the cause, Figure 22 shows the proportion of maternal deaths by age group with respect to the total maternal mortality. As example, for every 100 maternal deaths in Venezuela, 16 refer to women aged 15-19. This rate is high when compared to the 21 percent of maternal deaths within the two age groups with the highest fertility rate (30-34 and 35-39), as shown in Figure 21.

After a detailed investigation of the causes of death for adolescent women, the most important risk factors before, during, and after childbirth are complications in delivery, such as hemorrhages and disorders (Table 17).

TABLE 17 PERCENTAGE OF MATERNAL RELATED CAUSES OF DEATHS TO TOTAL DEATHS IN WOMEN 15-19 (2007)

	Pregnancy with abortive outcome	Oedema, proteinuria and hypertensive disorders in pregnancy, childbirth and the puerperium	Other maternal disorders predominantly related to pregnancy	Maternal care related to the fetus and amniotic cavity and possible delivery problems	Complications of labour and delivery	Delivery	Complications predominantly related to the puerperium	Other obstetric conditions, not elsewhere classified
Mexico	0.05	0.25	0.05	0.06	0.21	0.00	0.05	0.17
United States	0.01	0.04	0.03	0.00	0.00	0.00	0.03	0.09
Panama	0.00	0.39	0.00	0.19	0.19	0.00	0.00	0.19
Argentina	0.16	0.14	0.02	0.00	0.05	0.00	0.07	0.16
Brazil	0.05	0.13	0.03	0.03	0.06	0.00	0.11	0.14
Chile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Colombia	0.05	0.22	0.00	0.00	0.10	0.00	0.09	0.37
Ecuador	0.11	0.30	0.00	0.08	0.30	0.00	0.08	0.11
Paraguay	0.57	0.29	0.00	0.00	0.48	0.00	0.29	0.38
Peru	0.03	0.09	0.00	0.03	0.03	0.00	0.12	0.06
Venezuela	0.10	0.09	0.00	0.02	0.08	0.00	0.07	0.10

Third, except for the paper by Kruger and Berthelon (2012), they do not explicitly take into account that teen motherhood may be a source of inequity. The effect of teenage motherhood might be heterogeneous. In fact, teenage motherhood is not only more likely to occur among the poorest but also its effect is more likely to be negative and stronger among them because this group has fewer resources to cope with the new challenge and to recover from the shock. Kruger and Berthelon (2012) test for heterogeneous effects of teen childbearing on the educational outcomes of the mother across two observable dimensions of the household, i.e. poverty status and the educational attainment of the grandmother. They find that the negative effects reported above are stronger and concentrate among poor and low-educated households. Furthermore, teenage motherhood might be a gender-related source of inequity, as we discuss further in Section 3.13 and 3.1.4.

Finally, it is worth noting that early childbearing might have important negative intergenerational effects and/or negative consequences on the other household members. These two points are discussed in detail in Section 3.1.3 and Section 3.1.4.

BOX 22. MATERNAL DEATHS AND SUICIDE: PREGNANT TEENAGERS ARE AT HIGHER RISK OF COMMITTING SUICIDE

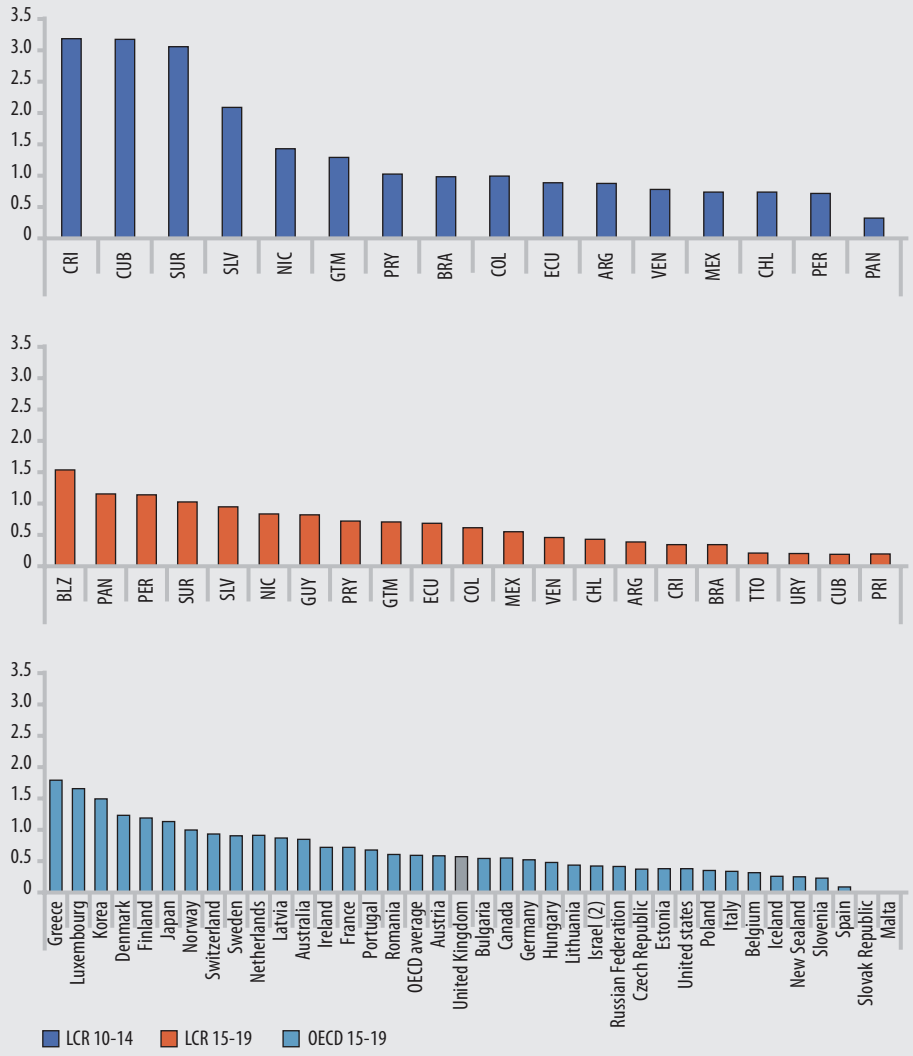
Within the wide range of direct and indirect factors that studies identify as contributing to maternal mortality, (Shen and Williamson, 1999; Conde-Agudelo and Belizán, 2000), the elements of age at first marriage, domestic violence, and complications from unsafe abortion are found to correlate strongly with maternal mortality (Shen and Williamson, 1999; FIGO Committee Report, 2006). In 2004, the Nicaraguan Ministry of Health analyzed the incidence of maternal deaths related to violence, unwanted births and suicide, rather than obstetric complications (PAHO et al., 2005). The study found that homicide explains 11 percent of all maternal deaths and suicidal deaths represent 69 percent of all maternal deaths. Furthermore, they found that 69 percent of the maternal death refers to adolescent females (PAHO et al., 2005). Suicide is one of the main causes of death among pregnant teenagers. The "Sistema de Morbi-mortalidad" of the Ministry of Health of El Salvador reports suicide as the second cause of death among young people age 10 to 19 and the fourth within the population aged 20-49. The suicide rate is particularly high among pregnant adolescents. One out of every two deaths of pregnant adolescents is due to suicide.

The graph shows the female-male adolescent suicide ratio for those aged 10-14 and 15-19 in various LAC countries and for adolescents aged 15-19 in some OECD countries. It computes the Female-Male adolescent suicide ratio for boys and girls aged 10-19 and define the ratio between the number of deaths due to suicide committed by girls for every 100,000 women of the same age and the number by boys for every 100,000 men of the same age. A Female-Male adolescent suicide ratio equal to one indicates that as many girls as boys commit suicide while a ratio higher than one indicates that more girls end their lives than boys. The yellow line indicates the average Female-Male adolescent suicide ratio for OECD countries.

It is worth noting that:

- In most countries boys are more at risk of committing suicide (i.e. the Female-Male adolescent is lower than 1).
- In most LAC countries, the Female-Male adolescent suicide ratio is higher than the average ratio of OECD countries.
- The female suicide ratio is most frequently higher than the male suicide ratio in LAC as compared to the OECD (i.e. more LAC than OECD countries have an Female-Male adolescent suicide ratio that is higher than one).
- The Female-Male adolescent suicide ratio is particularly high among the youngest. For example, in Costa Rica (CRI) for every one boy that committed suicide, three girls died for the same cause.

FIGURE 23. FEMALE-MALE ADOLESCENT SUICIDE RATIO IN LAC AND THE OECD, BY AGE GROUP, 2005

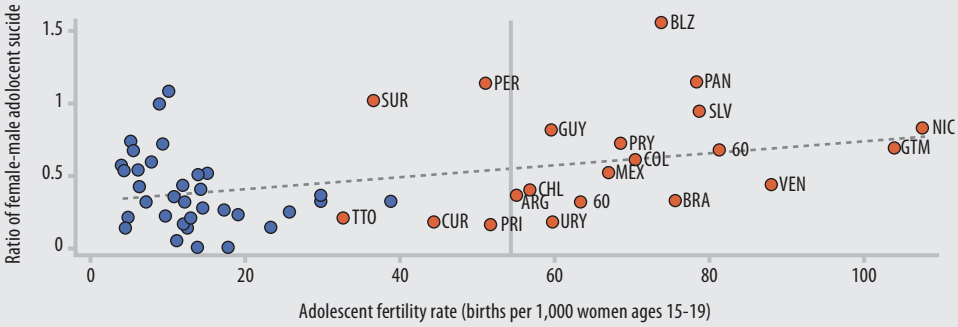


Source: PAHO, 2005.

These findings suggest that girls are relatively more vulnerable than boys in LAC to a higher risk of committing suicide than in OECD countries. The Figure 24 shows the correlation between the Female-Male adolescent suicide ratio and the adolescent fertility rate in LAC and in OECD countries. Notably, the Female-Male adolescent suicide ratio positively correlates with the adolescent fertility rate. The risk of committing suicide is therefore relatively higher for girls than for boys in those countries where the teenage fertility rate is higher. This might suggest that teenage pregnancy is a risk factor for committing suicide. This data most likely underestimates the phenomena, given that it does not account for attempted suicide.

Another very interesting finding is that the graph situates many LAC countries above the regression line, indicating that the adolescent fertility rate alone cannot explain why the Female-Male adolescent suicide rate is higher in some countries than in others with a similar adolescent fertility rate. This might be the symptom of other constraints and stressors which push female adolescents to perceive suicide as the only escape route.

FIGURE 24. FEMALE-MALE ADOLESCENT SUICIDE RATIO CONDITIONAL ON ADOLESCENT FERTILITY RATE IN LAC AND OECD, 2005



Source: PAHO, 2005.

3.1.2 Intergenerational Links

Previous research reveals important negative intergenerational effects of teenage motherhood. To investigate the intergenerational links of teenage childbearing to economic and social development, studies may focus either on the effects of childbearing on maternal investments in human capital as reported above, or the consequences of teenage childbearing on development of the child.

Existing studies analyze the effect of being born to a teenage mother on a variety of outcomes, such as low cognitive test scores, behavioral outcomes, grade repetition, and economic disadvantage. The majority of papers find significant effects on the behavior of children but no effect on academic outcomes at later stages in life (Table 18).

The evidence on the consequences of teenage pregnancy on maternal outcomes is somewhat contradictory between the results of studies that use OLS methods and those that try to solve potential selection-bias problems. OLS estimates do not account for selection bias and thus overstate the effects of teenage childbearing on various child outcomes.

The research by Geronimus et al. (1992) is particularly effective in addressing this point. The study uses standardized test scores to estimate the effect of teenage childbearing on the cognitive development of the child. The results show that when no controls are used, differences in the mean score favor children of non-teen mothers for all outcomes.

TABLE 18 CONSEQUENCES FOR THE CHILD: EVIDENCE FROM OTHER COUNTRIES

Paper	Outcomes	Country	Data	Method
Geronimus et al. (1992)	None or moderate adverse effect on cognitive development, achievement, behavioral problems	US	National Longitudinal Survey of Youth, 1979	Fixed effect (cousins)
Francesconi (2008)	Negative effects on educational attainment and future income, greater risks of inactivity and teenage childbearing	UK	British Household Panel Survey	Fixed effect (siblings)
Levine et al. (2004)	No effects on children's t-score and grade repetition. Negative effect on risky behaviors (fighting, truancy, early sexual activity) and other behavioral problems	US	National Longitudinal Survey of Youth, 1979	Fixed effect (cousins), IV
Lopez Turley (2003)	No negative effects on children's t-score and behavioral problem	US	National Longitudinal Survey of Youth, 1979	Fixed effect (sisters)

When control variables are added, these estimates decrease. The use of cousin-fixed effects (or the "within-family" fixed effect) reduces the outcome even further to the point where some effects favor children from teen moms. Conversely, Haveman et al. (2008) use only family background controls to account for differences in family environment to show that early childbearing has a negative and significant effect on the likelihood of completing high school.

The findings are different in terms of the behavioral outcomes of young adults born from teenage mothers. The study on male incarceration by Grogger (2008) finds significant effects of maternal age on the incarcerations of the respondent, even when controlling for maternal age at first birth. Similarly using family background controls, Levine et al. (2004) find no effect of early childbearing on academic attainment; they do find a significant impact on behavioral problems such as early sexual initiation, fighting, truancy etc. Finally, Francesconi (2008) associates being born to a teenage mother with worsened outcomes as a young adult, such as teenage birth, smoking or economic inactivity. These results provide robust controls for unobservable heterogeneity within the family and compare the outcomes of two siblings born to the same mother who timed their births at different ages.

Very few studies look at the impact of early childbearing at different points in time. Moore et al. (2008) uses cross-sectional data to find that the effect of young maternal age decreases over time. The adverse effect on academic achievements is significant for children aged 4 to 14, but not to those aged 12 to 16 or 18 to 22. To the best of our knowledge, Lopez Turley (2003) is the only paper to use longitudinal data to explore how the effect of teenage childbearing evolves over time. The author focuses on the evolution of tests scores for a sample of children 3 to 16 years of age. When sibling-fixed effects are included, the effect of being born to a teenage mom decreases. The study concludes "the lower test scores and increased behavior problems of children born to younger mothers are not due to her age but to her family background." It is worth noting that all studies described thus far use databases from either the US or the UK. What can we know about the impact of early childbearing on the outcomes for children in Latin America?

As part of this Report, Arias and Lopez-Calva (2012) investigate the impact of teenage pregnancy on child outcomes using the three waves of the Young Lives (YLs) project for the Peruvian sample.[51] In addition to anthropometric outcomes, the study measures child performance in terms of cognitive skills, employing standardized tests such as the Raven's and the Peabody Picture Vocabulary Test (PPVT). The study investigates both the

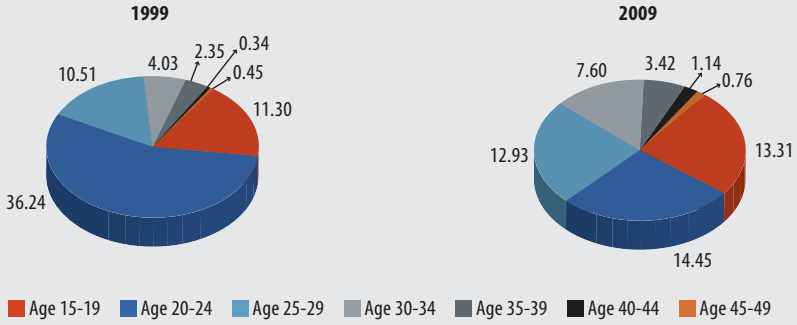
51 In another forthcoming paper using YLs data for Peru, Lopez-Calva and Arias (i) investigate the impact that cognitive ability and personality traits can have on individual outcomes and social progress, and (ii) identify how the environment in which individuals grow influences the development of these skills, and in particular how being born to a teenage mother affects the child's skills development.

BOX 23. NEONATAL DEATH

Studies often associate early childbearing with neonatal death and increased incidence of low birth-weight (LBW), preterm delivery, and small-for-gestational-age (SGA) infants (Conde-Agudelo et al., 2005). The World Health Organization defines neonatal death (WHO, 1992) as occurring "during the first 28 completed days." [52]

Few countries present information on the maternal age for newborn deaths, making it difficult to draw conclusions. Figure 25 shows the percentage of neonatal deaths by age group for 1999 and 2009 in El Salvador. Over the 10-year period, an increase in the percentage of neonatal deaths seems to occur for the 15-to-19 age group. In both years, the percentage is higher for that group than for women 25 to 29 years old.

FIGURE 25. PERCENTAGE OF NEONATAL DEATHS BY AGE GROUP, EL SALVADOR



Note: Includes only ICD "Certain conditions originating in the perinatal period" (P00-P96) classification deaths.
Source: PAHO, Mortality Data, authors' calculations.

young cohort of children (wave one at age 6 and 17 months old; wave two at around 5 years old, and wave three at about 8 years old) and the older cohorts (wave one at ages between 7, 5 and 8.5 years; wave two at approximately 12 years of age, and wave three at old 15 years old).

The study uses pooled OLS estimation with cluster-robust standard errors and adds time and regional fixed effects. It finds that the negative effect of young maternal age on child's height- and weight-for-age is lower for the youngest cohort (the effect disappears for the older cohort) and it decreases over time (looking at the same cohort at different points

52 WHO, 2006.

in time). None of the estimated coefficients for teenage motherhood has a statistically significant effect on the cognitive skills of the child. Their results do not change when controlling for whether the mother was a teenager or not when she started childbearing with her first child. Consistently with previous cross-sectional studies, they find a significant (negative) effect of young maternal age on risky behaviors and behavioral problems. The older the mother when the child was born, the less likely that the child will be sexually active by age 15, report drinking alcohol sometimes or more, or try marijuana at least once.

The study thus suggests that the negative effect of early childbearing on child nutritional status is reversible. Children born to teen mothers appear worse off in the first year of their life but they catch up relatively quickly so that any differences with children born to older mothers disappears by age five. Nevertheless, they still face a higher risk of deviant behavior when they become adolescents.

3.1.3 Consequences for the father

Early pregnancy can affect many other individuals beyond the mother and child. Most of the very little research into the consequences to the father of the child uses data from the U.S. and U.K. To the best of our knowledge, no studies exist for LAC on the consequences of premarital fatherhood on the later outcomes for the father.

In the U.S., Card and Wise (1978) use a propensity-score matching technique to study the effect of teenage childbearing on the educational attainments of a sample of students attending grades 9 to 12. They find that teenage childbearing results in greater educational deficits for the young mothers than for the young fathers who do not have to endure the pregnancy and who are generally less responsible for the early care of the child. Nevertheless, both the adolescent mothers and fathers present substantially less education than their classmates.

Similarly, Sigle-Rushton (2005), uses data of a cohort of British men born in 1970 and a propensity score matching technique to find that "despite the importance of selection, young fatherhood may initiate pathways to disadvantage, particularly when the event interrupts educational or career progression or when it is associated with a series of relationship disruptions." [53]

Nock (1998) uses data from the National Survey of Youth to investigate the consequences of premarital fatherhood. In order to disentangle the extent to which negative outcomes are due to the early birth itself or to a poor socioeconomic background, he uses a hazard

53 Sigle-Rushton (2005), pag. 705.

model and fixed-effect analysis. He finds that men who have children before marriage leave school earlier, have lower earnings, and work less than comparable men of the same age.

3.1.4 Consequences for other household members

Teen childbearing will likely impact the living arrangement of the nuclear household. Evidence from the United States suggests that teen childbearing will probably negatively affect the marital prospects of the woman. After childbirth, teen mothers are more likely to live in a single-headed household or the home of their parents and are less likely to be married. Their children are more prone to grow up with their grandparents or in a single-parent family.

Conversely, Buvinic (1998) finds little evidence on the negative consequences of early childbearing on the marriage prospects of the mother in Barbados, Chile, Guatemala and Mexico. Teen mothers are as likely as adult mothers to marry in the subsequent years.

Similarly, Arceo-Gomez and Campos-Vazquez (2012) find that in the short run, Mexican teenagers who become pregnant have higher marriage rates than those who do not. However, while in the long run these teenagers have a higher probability of being married, they also present a higher probability of being separated or divorced.

BOX 24. HOW TEEN CHILDBEARING AFFECTS THE MOTHER'S MARITAL PROSPECTS AND LIVING ARRANGEMENTS IN MEXICO

Using the Mexican Family Life Survey, we consider those girls aged 13 through 18 who became pregnant between 2000 and 2005. Our sub-sample of 213 teen mothers represents 11.7% of the sample of teenagers (mothers and non-mothers) of the same age. Looking at the characteristics in 2005, we observe that 70.9% of the pregnant girls are married. The majority marry the same year that they became pregnant or a year later. In most cases (89.5%), they live with the biological father of the child, while 17.8% of the new spouses join the parental household.

TABLE 19. NEW LIVING ARRANGEMENT AFTER CHILD BIRTH

	%	Age of pregnacy-age of marriage/union	%	Cum %
Pregnant (N=213)	11.7	Marriage 2 years before	3.31	3.31
Married/union	70.89	Marriage 1 year before	11.26	14.57
Spouse coresident	89.47	Same year	36.42	50.99
Parent coresident	17.76	Marriage 1 year later	21.85	72.85
Single	29.11	Marriage 2 years later	5.96	78.81
Parent coresident	84.62	Missing	21.19	100

The new living arrangement is relevant for the development of the child. A wide selection of literature shows that the family environments influence the cognitive development and psychological traits of the child. Early skills develop at home. Previous research shows the importance of family cohesion and paternal presence to child development (Ermisch and Francesconi, 1997; Francesconi et al., 2006 and 2010; McLanahan and Bumpass, 1988).

Given that in many cases the teen mothers live in the parental house after the birth of the child, both the parents and siblings are likely to be affected. For example, the household's wealth will likely decrease with potential consequences for the siblings' develop-

BOX 25. THE IMPACT OF HOUSEHOLD SETTING ON CHILD DEVELOPMENT: EVIDENCE FROM BOLSA FAMILIA IN BRAZIL

Teenage pregnancy is highly relevant in Brazil, where according to the *Sistema de Informações de Nascidos Vivos* (SINASC) teenagers aged 19 and younger give birth to one-fifth of all children born. As many of these young women live in poor families, they are eligible for Brazil's conditional cash transfer—the *Bolsa Familia*. The current policy, however, allows only one recipient per household, usually the matriarch. As many of these teen mothers continue living with their own mothers, Reynolds (2012) investigated the intra-family dynamics surrounding this transfer including the trust between the teen and her mother, especially as teen pregnancy can be considered deviant behavior. *Does the young mother have a stronger interest in her own child than her mother and does this suggest that targeting the grandmother to receive the stipend is not an optimal policy for the child?* Reynolds had more than 150 mother-daughter pairs play economic games in Salvador, Brazil to study the nature of the relationship between adolescent mothers who live with their mothers.

One of the trust games designated one individual as the owner of a "magic" hat that doubled the value of whatever money was placed inside. Both the teen and her mother were given a small sum of money. Each secretly chose how much to contribute to the hat and how much to keep for themselves. The staff also contributed to prevent the hat holder from discerning the contribution of her family member. Participants achieve the maximum monetary winnings for the family if the non-hat owner places the entire sum into the hat as a trust in the hat-owner's spending. If the non-owner does not trust the hat holder, she may prefer to keep the money in her own pocket even though the total monetary outcome is not as high for the family as a whole. Participants repeat this exercise with the roles reversed. The results of this gift-giving assignment show that trust is high. No one kept all the money for themselves, and most contributed 80 percent or more of their personal holdings. There is still room for improvement, however, because 43 percent of the mother-daughter teams fell short of the maximum winnings.

ment, particularly if they are of schooling age. The time allocation of both parents and siblings will also probably change through the substitution of childcare for previously free or working hours.

The study by Arceo-Gomez and Campos-Vazquez (2012) is one of the few papers investigating the consequences of early childbearing on parents for LAC. However, the authors do not find evidence of an effect of teenage pregnancy on the outcomes of other household members, such as the work hours of the parents or the income per capita of the household.

Another bargaining game asked the teen and her mother to reveal their willingness to pay[54] for a cloth counting book. They were then asked to negotiate a joint willingness to pay for this developmental toy that was not readily available in their community. The purchase would use one of these three values randomly chosen. If the joint valuation tended toward either of the individual valuations, evidence of bargaining was found. If either of the individual valuations was higher than the other, it could indicate a higher preference for the developmental welfare of the baby. Finally, in some cases the teen received the money to purchase the baby book, while in other cases her mother did. Any money (change) left over after the transaction was returned to whoever had originally received it. If the valuation of the teen is higher when the grandmothers held the money (compared to when they themselves held the money), the teens have probably inflated the value of the baby book. Therefore, she expects less benefit from the change remaining in the pocket of her mother than in her own. Likewise suspicious grandmothers could inflate their valuations as sign of not trusting the teen with leftover funds. The bargaining game did not confirm any of these hypotheses, indicating a similar shared preference between the teen and the grandmother for the child's welfare and likewise a trust in the money being in the pocket of the other.

While Reynolds (2012) finds a fairly harmonious view of the family from the insights of these economic games, the qualitative part of this study reveals a tension. Both recognize the teen mother as the better parent but hold her directly responsible for the care of the child. Thus while this study fortunately concludes no need exists to change the targeting of the *Bolsa Familia* stipend from mother to teen (out of concern that additional teens could be incentivized by the stipend to have children), it recognizes a need for additional support to these young mothers.

54 A price for the book was drawn randomly and the book would be purchased if the willingness to pay was higher than the price. This technique is common in experimental economics and can be more efficient than typical price-purchasing patterns determining a demand curve.

BOX 26. RELATIONSHIP BETWEEN TEEN PREGNANCY AND THE OUTCOMES FOR YOUNG SIBLINGS IN MEXICO

Using the Mexican Family Life Survey, the study considers young household members (mainly siblings) of the girls aged 13 to 18 (at baseline in 2002) which the first follow-up in 2005 identified and interviewed as reporting a pregnancy between 2002 and 2005 while they were 15-19 years old. About 11.7% of the sample reports a pregnancy in the period.

The survey attempts to assess whether young household members aged 13 to 19 years old in 2002 change their behaviors due to a teenage pregnancy in their households with two or more young members. The study compares young members in households with a pregnant girl with those in households with a teenage girl who did not become pregnant and excludes the pregnant girls.

TABLE 20. RELATIONSHIP BETWEEN TEEN PREGNANCY AND YOUNG SIBLINGS' OUTCOMES IN MEXICO

	(1)		(2)		(3)		(4)		(5)	
	Started working		Change hours worked		Stopped school		Married		Spends time caregiving activities	
Has pregnant teenager in hh (between 02-05)	0.0793	[0.0531]	0.0799+	[0.0458]	0.1439*	[0.0674]	0.0556+	[0.0303]	0.0969*	[0.0391]
Age	0.0304**	[0.0082]	0.0436**	[0.0080]	0.0608**	[0.0101]	0.0323**	[0.0043]	0.0206**	[0.0059]
Father is in hh	0.0206	[0.0555]	0.0256	[0.0564]	-0.0267	[0.0676]	0.0329	[0.0306]	-0.0917*	[0.0464]
Mother is in hh	0.0247	[0.0693]	0.0955	[0.0713]	0.1031	[0.1159]	-0.1393+	[0.0823]	-0.0429	[0.0567]
Father's education	-0.0117**	[0.0043]	-0.0114**	[0.0043]	-0.0084	[0.0053]	0.0015	[0.0023]	-0.0009	[0.0032]
Mother's education	-0.0163**	[0.0047]	-0.0250**	[0.0046]	-0.0259**	[0.0060]	-0.0044+	[0.0025]	0.0051	[0.0032]
Number of adults >=15	-0.0127	[0.0118]	-0.0056	[0.0118]	0.0000	[0.0148]	-0.0070	[0.0064]	0.0085	[0.0077]
Number of members <15	-0.0114	[0.0104]	0.0047	[0.0103]	0.0294*	[0.0143]	0.0009	[0.0055]	0.0160*	[0.0070]
PCE 2nd quartile	0.0042	[0.0433]	0.0381	[0.0417]	-0.0246	[0.0534]	0.0189	[0.0215]	0.0164	[0.0298]
PCE 3rd quartile	-0.0234	[0.0471]	0.0057	[0.0482]	0.0366	[0.0607]	-0.0078	[0.0255]	0.0372	[0.0334]
PCE 4th quartile	-0.0422	[0.0547]	0.0436	[0.0543]	0.0073	[0.0677]	-0.0276	[0.0316]	0.0010	[0.0386]

This research explores whether any association exists between a teenage pregnancy event and the probability of starting work, leaving school, getting married, leaving the original household, or spending time in care-taking activities. We find that young household members living in a household with a teenage pregnancy are more likely to work more hours, stop attending school, get married, and spend some time in the care taking of children or of sick or older household members.

The results are similar—except for the insignificant change in hours of work—when conditioning on all young members staying in the original household by 2005, i.e. excluding from the sample those young members who left the household before 2005.

TABLE 20. RELATIONSHIP BETWEEN TEEN PREGNANCY AND YOUNG SIBLINGS' OUTCOMES IN MEXICO (CONT.)

	(1)		(2)		(3)		(4)		(5)	
	Started working		Change hours worked		Stopped school		Married		Spends time caregiving activities	
PC Wealth 2nd quartile	0.0468	[0.0427]	0.0505	[0.0409]	-0.0549	[0.0544]	-0.0185	[0.0226]	0.0042	[0.0304]
PC Wealth 3rd quartile	0.0233	[0.0449]	0.0109	[0.0437]	-0.1173*	[0.0560]	0.0106	[0.0232]	0.0187	[0.0300]
PC Wealth 4th quartile	0.0618	[0.0514]	0.0909+	[0.0511]	-0.0658	[0.0646]	-0.0092	[0.0316]	-0.0185	[0.0363]
Attending school	-0.0542	[0.0349]	-0.1632**	[0.0307]			-0.0656**	[0.0191]	-0.0616*	[0.0259]
Height in cm	0.0092**	[0.0018]	0.0108**	[0.0017]	0.0006	[0.0021]	-0.0012	[0.0009]	-0.0072**	[0.0012]
Raven's score	-0.0048	[0.0053]	-0.0044	[0.0051]	-0.0346**	[0.0064]	-0.0048	[0.0030]	0.0021	[0.0038]
Rural	-0.0971**	[0.0308]	-0.0889**	[0.0304]	0.0311	[0.0392]	-0.0135	[0.0176]	-0.0768**	[0.0225]
Observations	1,257		1,676		1,088		1,698		1,479	
Pseudo-R2	0.0777		0.127		0.121		0.108		0.0762	
Mean dep var	0.321		0.473		0.514		0.130		0.176	

Note: Marginal effects; Robust standard errors in brackets; ** p<0.01, * p<0.05, + p<0.1; Standard errors clustered at household level.
Source: Mexican Family Life Survey; author's calculations.

3.2 THE INDIVIDUAL COST OF ADOLESCENT PREGNANCY: SOURCES OF INEQUITY AND COPING STRATEGIES

From an equity perspective, two potential sources of inequity relate to teenage pregnancy. The first refers to the gender-related source of inequity. While very few studies have investigated the consequences for the father of the child (as highlighted in the previous section), the existing evidence suggests that mother disproportionately suffers the burden of early childbearing. The second potential source relates to the socioeconomic background of the teen mother. The long-term burden and the available options as coping strategies are unequally distributed within the group of girls who face teenage pregnancy. These conditions depend on the specific circumstances of different groups defined by income, education level, location and ethnic origin, among other factors.

Early childbearing thus implies higher costs for girls versus boys and can probably constrain their further development depending on their socioeconomic circumstances. In this section we focus on this potential source of inequity. It is quite plausible that the impact of early childbearing will vary depending on the characteristics of the mothers as well as the setting where they give birth. Wealth and ethnicity are among the top characteristics that can either mitigate or exacerbate the consequences of adolescent childbearing. Age at birth is another dimension along which the impact may vary. Is early childbearing as consequential among the 17-19 year olds as among the youngest? How much are wealthier families relatively better able to cope with the consequence of premarital fertility than poorer ones?

Azevedo et al. (2012) find evidence of the heterogeneity of the effects of teenage childbearing on the labor market outcomes in Mexico along these three dimensions: age at birth, ethnicity, and wealth. They find that an increase in the asset index by one standard deviation raises the probability of employment by 16 percentage points. The likelihood of employment is lower among indigenous adolescent mothers compared to those who were non-indigenous. The easier access to jobs for the adolescent mothers from wealthier families might indicate a better social network and a job-hunting process with stronger parental support. The lower probability of employment for the indigenous group is probably due to their strong association with poverty.

Interestingly, the impact of adolescent childbearing on labor income evolves in the opposite direction. The earnings of adolescent mothers are lower among women with higher asset indices and higher among women who gave birth at the age of 16 and younger. Both findings might result from whatever support the family received. Wealthier families are able to help their daughters financially, which can alleviate any pressure to drop out of school and find a job. Similarly, younger mothers might be more likely to remain in their

parents' home with the potential of free childcare. An alternative explanation is that a woman who gave birth earlier will require a longer "recovery" time—the period in which her child is old enough to require less care—and consequently will have had a chance to participate in the labor market for longer. The greater length of labor market participation may account for the greater labor income.

BOX 27. ADDITIONAL WELFARE-COSTS WEIGH ON YOUNG MOTHERS. EVIDENCE FROM THE QUALITATIVE STUDY IN ECUADOR

Most of the participants in the Ecuador study express happiness about being a parent; it seems it is easier for them to name costs related to early pregnancy than benefits. The main issues that are raised in this regard relate to a loss of free-time, a loss of time for themselves, living a life in function of a third person, the loss of friendship and of good relationships to their parents, and finally, the loss of their childhood.

Even though not strongly reflected in the interviews, some participants share experiences of discrimination within society and they think that girls are the ones who usually have to take the blame. The participants cite associations such as bad habits and promiscuity with teenage pregnancy.

In many case the reactions of the girls´ parents to the pregnancy is quite strong. Some parents expulse the pregnant girls from their homes: "My mother slapped me and told me to get my things and leave" (pregnant girl, 18 years, mestiza, incomplete secondary). Others punish them with psychological violence by ignoring them: "My husband ignored both girls during their pregnancy; he gave them such a hard time. He used to get home very late so the girls would be sleeping and he didn't have to see them." (Mother of pregnant adolescent, 54 years, mestiza, incomplete primary education.)

The great majority of interviewed adolescents' mothers recommend postponing pregnancy to be more "responsible" and "independent." Some refer directly to a loss of childhood and of freedom: "I think a good age would be between 20 and 25 years if they can wait, because having relations so early has consequences (…) So do you think that maternity has a strong impact then? It is a very hard path…one does not have the same freedom as before. (…) I don't see any advantages because at that age one is still a little girl. And the woman loses her dignity. That's what I think." (24-year-old woman, had her baby during adolescence, mestiza, incomplete secondary education.)

Given the new responsibility for the child, youth express the experience of pregnancy and becoming a parent as a loss of freedom. Several interviewees directly refer to the constraints in deciding freely, in going out, in having friendships due to being a parent. One even describes the baby as an obstacle to her future (15 years, incomplete secondary, MT). Some compare their life to that of friends who do not have children and realize that they are able to study, free to travel and do what they want to do.

BOX 28. THE PRICE OF BEING A FATHER AT EARLY AGES: PRESSURE TO GET A JOB AND RAISE A FAMILY. EVIDENCE FROM THE QUALITATIVE STUDY IN ECUADOR

The Ecuador qualitative studies looked at the impact of teenage pregnancy on fathers of babies born to adolescent mothers. However, it should be noted that the fathers interviewed were identified through the mothers of the babies. Thus, the fathers interviewed continue to have some connection to the mothers of their babies, and actually in almost every case observed they are either married or continue to be in a relationship with the mother of their child. Their realities are likely to be quite different from the ones of those fathers that did not assume their fatherhood in a comparable way.

Similar to the girls interviewed for the study, boys feel the increased share of responsibility as a burden. In particular, they mention the loss of freedom. Now, with the responsibility for a child, they have to adapt their own preferences to the needs of the newborn.

However, this new responsibility leads to a speed up in the maturation process—which some of them describe as positive. One father mentions that the baby becomes ´a motor´ (20-year-old father) that pushes him to set goals and achieve things in life. This pressure seems to be particularly strong on the fathers given the gender norms and roles that the society assign to them as the main income earner and breadwinner in a family:

"I work in order to feed my family; I see it from that point of view. I do not see it from the point of view of the company, the company is also important because it is a commitment, but it is for my family. If I work, my family will have something to eat, if I do not work, my family will not have anything to eat." (25-year-old father, complete secondary, mestizo, MT).

One father (20 years and father of a 10-week-old child) emphasizes the role of the child as follows:

´It is that I do not want my son or Mari to lack anything, I am ready to split my back off, but I want, I want that God gives me more strength than I have now, because now the motor of my life is she and my son, he is actually the engine of my life.´

And similarly, another father (21 years, complete secondary, MB) summarizes:

"I don´t know. I get anxious about how am I going to feed my wife, how will I do with my son. It would be a mess for me, so actually it is the strength that he gives me. I can be on the floor crying and completely being messed up, but I will try to continue, to carry on for my son, my son more than anything else."

However, it becomes clear that the new goals and aspirations linked to being a father divert them from their personal goals. Remunerated work suddenly seems to play an even more important role as immediate income is needed to support the family and to get out from under the economic dependence of their parents.

BOX 29. TEENAGE PREGNANCY ´A FAMILY AFFAIR.´ EVIDENCE FROM THE QUALITATIVE STUDY IN ECUADOR

Adolescent mothers and parents in general heavily rely on their mothers for both emotional and material support. Once they get pregnant, it seems that their mothers are the predominant support factor available to them. In several cases those (grand)mothers will become the caregiver for her grandchild. They oftentimes assume the role of parents rather than grandparents and refer to their grandchildren as if they were their own children:

"My grandson is the best, he is like my own son. He calls me 'mom Zoi' and my husband 'dad Cai' (…). The other grandparents he calls them: 'grandpa Alfred' and 'grandma Nancy.' He doesn't call me grandma, he is like my youngest son, he is mine, mine. I have my son's son but it's not the same; my daughter's son is closer to me" (Mother of adolescent mother, 51 years, mestiza, complete primary education).

While there is an expressed need for improved quality of sexual education and information on contraception in schools, none of the participants in the qualitative study in Ecuador refers to the State or institutions—such as church, school, or NGOs—to better support teenage mothers and their babies. Pregnancy is understood as a private and personal phenomenon—there do not seem to be any expectations that entities outside the private sphere play a role in supporting mothers or young families when it comes to the economic and social implications of early pregnancies.

3.3 ADDING UP THE PRIVATE AND PUBLIC COSTS OF TEENAGE CHILDBEARING: SOME CONSIDERATIONS

The evidence reported in this Section once again confirms that teenage pregnancy is a complex phenomenon to analyze and some cautions have to be used in the interpretation of the potential cost of teenage childbearing. As we noted, being a mother as an adolescent is an "endogenous" event, given that it is more likely to occur in a deprived socio-economic context. The problem arises because of unobservable characteristics, which affect both the fertility decision and the observed outcomes. In other words, teen mothers differ along a number of important unobserved dimensions from women who delay childbearing. As stressed in this section, it has serious implication on identifying the casual effect of early childbearing.

That is why, in various cases, the evidence of the effect of teenage motherhood are instead capturing correlations and are not casual relations. Part of the negative outcomes attributed to teenage pregnancy might indeed be due to the absence of opportunities and the poor educational and economic opportunities that teen mothers are facing.

However, this does not intend to suggest that having children during adolescence is a desirable outcome but it highlights that policies aimed at improving young women's opportunities may be more successful and effective than those policies targeted at the decision to have a child per se.

According with the findings discussed in the section, even controlling for unobservable cofounding factors, teenage motherhood has been found to have (small) negative effects on maternal outcomes (they are more likely to drop out from school, to enroll in secondary education) and sizeable effects on the child (mainly an increase in the probability of engaging in risky behavior). Evidence from other studies suggests that early motherhood might disturb the household equilibrium with negative externalities on the well-being of the other members of the household, including the siblings of the teen mother. Furthermore, we provide evidence on the risk of maternal mortality, fetal death, and infant mortality, as well as the probability of health problems and morbidity, which have proven to be higher when the mother is a teenager. Moreover, the evidence presented on the highest incidence of suicide among teen mothers is disturbing and under-investigated, mainly because of a lack of data availability.

Teen mothers are also more likely to live in a single-headed household, to divorce, or to have worse-off opportunities in the marriage market.

Finally, as noted above, this report focuses on the cost of teen motherhood and not of teen pregnancy. Thus, the cost related with the potential psychological consequences of being pregnant during the adolescence or the risk of serious complications from unsafe abortions are not counted.

Thus, beyond the methodological issues highlighted above in the analysis of correlations versus causal relations between teen motherhood and economic outcomes, there is sufficient proof to consider teen motherhood as a costly and risky event for the mother and the child.

However, it is worth highlighting that most of the analysis in this section is focused on the individual cost of early motherhood and does not account for the public cost. As noticed by Azevedo et al. (2012) for Mexico, women who gave birth during adolescence are more likely to participate in social programs and depend on social assistance income. This suggests that even in the best scenario, in which teenage childbearing does not generate an individual cost for the actors involved, it does represent a cost for the society and policies to align individual decisions with desirable social outcomes should be designed.

Fiscal costs related to early childbearing include (i) health-related costs both in prevention and health care provision for young mothers and their children; (ii) costs in the education system, including foregone returns from investment in girls and boys who abandon school, and (iii) the cost of specific programs that aim to reduce the incidence of the phenomenon and mitigate its impact.

According with the 2006 report by *The National Campaign to Prevent Teen Pregnancy*, the public sector costs of teen childbearing which taxpayers in United States had to pay in 2004 was about $9.1 billion (for a total of 420,000 births). The cost they estimated is divided in two broad categories: (i) those associated with teen mothers and their partners, and (ii) those associated with the children of teen mothers. The cost for the mother is computed as the difference in the taxes that they pay because their earnings are lower and the difference in the cost of public assistance they receive (which includes Temporary Assistance for Needy Families, Food Stamps, and housing assistance). The costs for fathers are also associated with lower taxes paid. For the children, the costs are those associated with publicly-provided health care, foster care and other child welfare services, and incarceration. They estimate that the average annual cost associated with a child born to a teen mother is $1,430, for a total of at least $9.1 billion in 2004. The costs per child increase significantly (annual cost per birth is $4,080) when the mother is aged 17 and younger.

4. POLICY OPTIONS

In the introduction to this Report we tell the story of Gaby, the high school girl who faked a pregnancy as a senior project. Her story is used to illustrate the complexity of the teenage pregnancy phenomenon, which this Report has aimed to disentangle, using available data within the LAC region. The ultimate objective of the analysis, however, is to provide elements for better policy design, one which takes such complexity into account.

The complexity of policy responses is proportional to the complexity of the phenomenon being addressed. The need for policy intervention in this case is well justified by the potential individual cost for the mother, the child and the other actors involved, as well as by the public cost of teenage childbearing. A shown in the previous chapter and summarized in Section 3.3, even after controlling for the initial lack of economic opportunities of teen mothers, early childbearing potentially decreases their future educational achievements and labor market opportunities. Early childbearing might also have important effects on the intergenerational transmission of poverty by placing the children of teen mothers at a higher risk of behavioral problems and engagement in risky behaviors. Evidence shows a correlation between teen childbearing, maternal mortality and suicide rates, especially among the youngest. Furthermore, teenage mothers are more likely to rely on social assistance which implies a public cost for society. In order to reduce the public costs, the best solution is increasing the effort in preventing teen pregnancy, when it is due to a lack of opportunities.

But there is more to the story. Unfortunately many "intangible" aspects cannot be easily enumerated or are difficult to evaluate. As the sociologist William Bruce Cameron said "[…] not everything that can be counted counts, and not everything that counts can be counted." For example, the psychological effects of getting pregnant and being a mother as an adolescent are difficult to assess. Are teenagers too young to face this emotional challenge? What are the consequences in terms of self-confidence and social stigma? These questions are still in debate. Some people can argue that being a young mother can also increase the control of women over their lives and can give a "purpose". Teenage pregnancy, we have seen in the previous chapters, maybe a channel for social mobility.

This evidence provides reasons to care about adolescent pregnancy and motherhood. One area that is critical relates to the macro conditions. We have shown strong evidence that the reduction of inequality and the creation of more opportunities for women reduce the levels of teenage pregnancy and ameliorate the effects of early child bearing. That remains a relevant general message and policies and programs that reduce poverty and gender inequalities are critical. On the other hand, at the micro level, the policy objective should be to widen the set of options for women, as well as their capacity to be in effective control over their lives –enhancing agency—so that fertility decisions are made on the basis of life plans they have reasons to value and teenage pregnancy is not the only option at hand or an unintended consequence of behavioral inconsistencies. An extreme situation, not analyzed in detail in this Report, is when pregnancy results from domestic violence and sexual abuse.

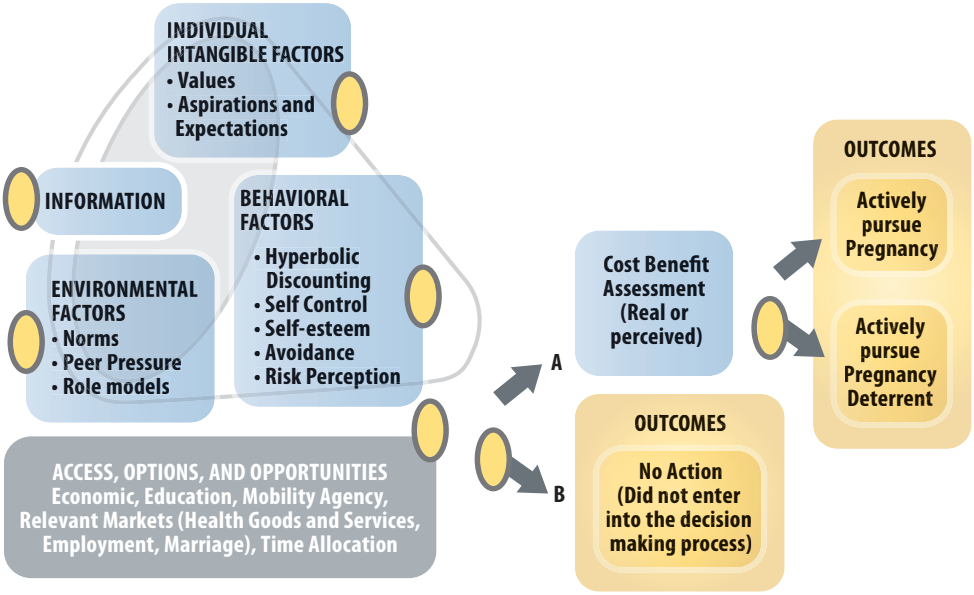
This chapter looks into the potential effectiveness of selected interventions used both to prevent teenage pregnancy and to support young mothers. The review of the policy initiatives follows the framework proposed earlier in the Report, where adolescent fertility choices arise through the interaction of three main mechanisms: socioeconomic opportunities, endowments/assets, and agency. The review of the policy initiatives reviewed focuses on how the designed policy interventions may be effective in reducing teenage pregnancy through these mechanisms.

4.1 THINKING ABOUT EFFECTIVE POLICY INTERVENTIONS: WHAT WE HAVE LEARNED

A variety of interventions have been tried to reduce fertility among adolescents. However, relatively few of them have counted with rigorous impact evaluation studies. The purpose of this section is to offer a systematic review of the results of interventions to reduce adolescent fertility, primarily in LAC, and more generally in developing countries.

Figure 26 maps the factors informing the individual actions to pursue or deter pregnancy according to the findings from the present report and from previous literature. According to the theoretical framework used in Section 2, the rationality behind the decision to get pregnant informs the adolescent on the benefits and costs of this choice. This cost-benefit analysis convinces her either to actively pursue pregnancy or actively pursue pregnancy deterrents (node A, Figure 26). In both cases, the final outcome might be either getting pregnant or not. However, as the evidence shown in report suggests, in many case the pregnancy is not the result of a conscientious decision but something that simply "happens". In those cases the adolescent did not engage in a decision making process (node B, Figure 26). The final outcome, as before, might be either getting pregnant or not.

FIGURE 26. MAPPING THE CRUCIAL NODES OF THE ADOLESCENT FERTILITY DECISION-MAKING PROCESS (OR LACK THEREOF) TO IDENTIFY EFFECTIVE POLICIES



It has been established throughout the report, that the decision making process of teenage girls with regards to fertility involves three main elements: i. The rationality element stricto sensu, ii. The individual intangible factors (such as values, aspirations and expectations) and behavioral issues related to informational constraints, self control, discounting utility, risk preferences etc., and iii. The environmental factor related to social interactions and norms. These three elements are in turn influenced by the macro context, the local social setting and the household environment and family background. Such complex setting defines access, options and opportunities, and ultimately affects the choice process among effective options available for teenage girls to define their life plans (Figure 26).

In Figure 26, we indicate with a yellow circle some of the crucial points/moments/nodes, which policy interventions aimed to prevent teenage pregnancy should target, in order to relax some of the constraints the adolescent faces, increase their opportunities, affects their behaviours or in the medium-long term, affect the social norms and set of values in the society.

For example, in the case of issues related to bounded rationality and informational problems, policies should enhance the options available to teenagers providing a controlled environment (for example through extended school hours programs) and improve an

effective access to information and sexual education (i.e. through education programs). They might inform the adolescents' decision making process by helping them in the evaluation of the cost and benefits related with having a baby; or in converting their choice into the desired outcome, for example helping make their choice to not get pregnant effective, through an effective use of contraceptive methods; or provide incentives for sexual active teenagers to consider the risk of unprotected sexual activities, becoming proactive in the decision about their own sexuality. While acknowledging the effects of peer and social interactions, policies should seek to direct the influence of social interactions towards the individuals' desired direction by influencing the formation of positive reference frameworks.

The policy review we propose in this section is not intended to be an exhaustive review, but it is rather meant to offer a classification of the most common policy interventions during the last decades in Latin America and other developing countries, for which impact

BOX 30. POLICY RECOMMENDATIONS FROM THE QUALITATIVE STUDY IN ECUADOR

One of the main findings of the qualitative work in Ecuador shows that in most cases it is not the pregnancy that suddenly terminates the girls´ fulfillment of their life choices as well as their educational aspirations. It rather seems the opposite way: Girls lack concrete life projects and the control over their destiny. Thus, if pregnancy happens to them at early ages, it does not pose a shock to these projects – as they seem to be non-existent. Following that, the logical consequence if one wants to prevent teenage pregnancy is to promote life skills, raise expectations through career development and activities likely to enhance aspirations and agency of girls and boys, such as for instance peering youth with ´achievers´. However, more research is needed on what works and where and for whom.

Another important entry-point for policy makers would be the empowerment of girls to take control over their bodies and over their sexuality as well as general sensitization and awareness raising efforts with regards to gender equality.

Also, several young parents (both fathers and mothers) refer to the fact that they were not able to foresee the consequences of early parenthood. Thus, some suggest it would be helpful if youths could be educated about the realities of early parenthood. Learning about how burdensome this reality can be.

Clearly, there is a lack of confidential and private spaces where information on sexual and reproductive health issues can be provided to youths. These should be provided, also through an increased involvement of parents, encouraging and preparing them to communicate on safe sex behavior issues with their children.

evaluations are available. In some case the effectiveness of the policies is measured on the final outcome (change in fertility level) and in other cases on intermediate indicators (such as on the use of contraception, or more responsible sexual behavior).

Most interventions to prevent teen pregnancy in the past have focused on improving the quality of education and health services. They have aimed to provide youth-friendly reproductive health services and enhance the sexual and reproductive-health knowledge of teenage girls and boys. More recent programs have sought to raise the opportunity cost of pregnancy by helping teens remain in school and/or by increasing their access to employment.

Examining the channels through which some interventions have reduced the likelihood of pregnancy can improve the design of effective policies to prevent teenage pregnancy. We classify the policy interventions found, for which impact evaluations are available, in six categories: school-based programs, peer education, health services and contraceptive use, extended school hours programs, conditional cash transfers and youth training programs.

Bearing in mind the framework proposed earlier in the Report, and the map sketched in Figure 26, we identify two main potential channels: i) opportunities and endowments/assets; and, ii) agency. Adolescent fertility choices arise from internal family dynamics and the interaction with partner and peers through these three mechanisms. Socioeconomic opportunities are related to her family background while the other "non-tangible assets" (i.e. agency and values/aspirations) reflect interactions between the young women and the other three factors dependant on the institutional context. As shown in the sections below, designed policies might have an effect on teenage fertility choice through their impact on one or more of these mechanisms. This framework can constitute a useful tool to think about how to design potentially effective policy interventions and organize evidence, mechanisms and indicators of success.

The analysis presented throughout this Report has been divided into risk factors and consequences. Risk factors can be addressed through policy interventions that focus on increasing education, health, and employment prospects in communities. These interventions can affect fertility choices by increasing the opportunities and assets of teenage girls. In addition to the indirect effect that these interventions can also have on increased aspirations and self-confidence, interventions such as information and access to contraceptives, and peer programs can have a direct impact on fertility choices through increased agency.

On the consequence side, different support has been provided to teen mothers, including psychological support and counseling for teen parents. Other programs aim to improve

TABLE 21. MAP OF INTERVENTIONS AND MECHANISMS

	Assets/Opportunities	Agency
Risk Factors	CCTs Youth Training Extended School-Hours	Peer education School-Based Contraceptive Use
Consequences	Childcare Programs Educational Scholarships Flexible School-Hours	Counselling Mentoring Psychological support

the future economic opportunities for vulnerable mothers through childcare programs and educational scholarships that can reduce the probability of dropping out of school. The following table shows an example of the framework used in this section to review the different policy interventions.

While this division is useful to provide a perspective of the different policies that have the potential to influence teenage pregnancy and early childbearing, it is by no means exhaustive. While the division between agency, on one hand, and assets and opportunities on the other, is helpful for illustrative process, the notion of agency, as mentioned previously, is complex and multidimensional. The context of where an adolescent lives, studies, works or spends her free time affects her behavior and decisions and will likely prove different for those teenagers who ultimately become mothers and those who delay childbearing. As such, interventions that have the potential to increase the opportunities available for teenage girls, for example, in terms of improved health, education and employment prospects, would undoubtedly have an impact on their aspirations and self-confidence, and ultimately, on agency.

For example, how do CCTs might affect teenage pregnancy? As discussed in Section 4.2.5 below, CCT programs increase educational enrollment due to the conditionality that the family has to comply with in order to receive the transfer. More challenging is to understand why attending school reduces the probability of adolescent pregnancies. We suggest as a potential channel the change in opportunities and aspirations. Plausibly, the mechanism responsible for the observed reduction in fertility through higher school participation might be an increase of perceived opportunities. If this is the case, the opportunity costs of pregnancy might be higher and might convince teens to disengage from risky behaviors. Increased levels of education may also strengthen self-confidence and impact the capacity to aspire, increasing the agency of teen girls. School attendance might also decrease teen pregnancy by changing the time allocation of adolescents and thus reducing the amount of time available for sexual activity. Furthermore, school might

provide a safe and supervised environment where social dynamics can control and guide peer interactions in the direction where delaying pregnancy become a real choice. Further discussion on the mechanisms through which CCTs may impact teenage pregnancy rates is found in below.

No clear recipe exists on how to decrease adolescent fertility prevalence. As mentioned, the most common policy options reflect assumptions on the nature of the fertility decision regarding full versus bounded rationality, along with the role played by social interactions and social/cultural norms. In most cases, adolescent fertility decisions result from choices, well informed or not, as well as social interactions that involve more than one dimension (and actors) at a time. The variety of mechanisms exemplified for CCT programs above sketches the complexity of the phenomenon.

For example, how do CCTs might affect teenage pregnancy? As discussed in Section 4.2.5 below, CCT programs increase educational enrollment due to the conditionality the family has to comply with in order to receive the transfer. More challenging is to understand why attending school reduces the probability of adolescent pregnancies. In Figure 27 we suggest two potential channels: a change in opportunities and aspirations, and the presence of physical barriers. Plausibly, the mechanism responsible for the observed reduction in fertility through higher school participation might be an increase in aspirations. If this is the case, the opportunity costs of pregnancy might be higher and might convince teens to disengage from risky behaviors. Alternatively, school attendance might decrease teen pregnancy by changing the time allocation of adolescents and thus reduce the amount of time available for sexual activity. Furthermore, school might provide a safe environment where social dynamics can control and guide peer interactions, in the direction where delaying pregnancy becomes a real choice. Further discussion on the mechanisms through which CCTs may impact teenage pregnancy rates is found below.

No clear recipe exists on how to decrease adolescent fertility prevalence. As mentioned, the most common policy options reflect assumptions on the nature of the fertility decision regarding full versus bounded rationality, along with the role played by social interactions and social/cultural norms. In most cases, adolescent fertility decisions result from choices, well informed or not, as well as social interactions that involve more than one dimension (and actors) at a time. The variety of mechanisms exemplified for CCT programs above sketches the complexity of the phenomenon.

4.2 SOME EXAMPLES OF EFFECTIVE POLICY INTERVENTIONS

This section focuses on a limited number of programs whose outcomes have been rigorously evaluated. The choices were made based largely on the quality of the program evaluation and on criteria intended to maximize the comparability of program effects. Nevertheless, comparisons between programs are problematic because they target different populations, living in different contexts and because the intensity and the length of the intervention period varies from program to program.

Most of the programs were conducted in Latin America and countries from other developing regions (mostly in Africa) and had as a primary goal the prevention of unintended first pregnancies among adolescents. Because most pregnancy prevention programs are made up of more than one component, it is difficult to determine which component(s) make a difference, which ones lead to the largest difference, or whether all components are effective and ultimately needed to pursue the desired goal.

As noted above we identify six categories: school-based programs, peer education programs, health center services, extended school hours programs, conditional cash transfer programs and youth training programs. In Sections 4.2.1 through 4.2.7 we provide some examples of past interventions for each category.

4.2.1 School-based programs

In the past, most interventions have focused on increasing sexual education chiefly through school-based programs. These types of interventions often have the double objective of preventing unintended teenage pregnancy and preventing sexually transmitted diseases. In many cases, the sex education component includes an abstinence message along with discussions about the correct and consistent use of contraception. The abstinence message in most cases is intended to reduce the risk of pregnancy by delaying sexual initiation. The contraceptives module is intended to reduce both the risk of pregnancy and the risk of contracting sexually transmitted diseases for those adolescents who are sexual active.

In this section we present some examples of school-based interventions, which by on increasing access to information, can impact agency in the fertility choice. Table 22 summarizes information about the components of each program, the characteristics of the participants, the evaluation design, the indicators of success and the effectiveness of the programs.

An example of school-based interventions is the *TeenSTAR Program*, a school-based program aiming to prevent adolescent pregnancy in high schools in Santiago, Chile. The pro-

gram has been evaluated by Cabezón et al. in 2005. The program targeted three cohorts of public high school girls for a total of 1259 girls: the 1996 cohort of 425 students, which received no intervention; the 1997 cohort, in which 210 students received an intervention (treatment group) and 213 (control group) did not; and the 1998 cohort, in which 328 students received an intervention and 83 did not. Girls were aged 15 and 16 at the start of the program and were randomly assigned to control and treatment groups in these cohorts. The school-based education program followed an abstinence-only-approach. The program was implemented as one class per week over the course of an entire academic year. Using a difference-in-difference technique Cabezón et al. (2005) find that pregnancy rates for the treatment and control groups in the 1997 cohort were 3.3 percent and 18.9 percent respectively; and 4.4 percent and 22.6 percent for the 1998 cohort. Given the randomized design of the intervention, this finding suggests that the intervention was effective in the prevention of unintended adolescent pregnancy among the treated group of girls. A limitation of this work is that it is unclear whether it accounts for dropouts, which is likely to be a non-random event. Furthermore, the study does not ask or report whether abstinence was practiced more, or whether other contraceptives were used more, which prevents a better understanding of the mechanisms at play.

TABLE 22. SOME EVIDENCE FROM SCHOOL-BASED PROGRAMS

Author	Interventions	Target Population	Mechanism	Findings	Evaluation Strategy
Cabezón et al. (2005)	Abstinence only in-school adolescent education program. The program was implemented as one class per week over the course of an entire academic year.	Adolescent girls in public high school in Santiago (Chile). Aged 15 and 16 at the start of the program	Information	Pregnancy rates for the intervention and control groups in the 1997 cohort were 3.3% and 18.9% respectively, and were 4.4% and 22.6% for the 1998 cohort.	Difference in differences
Duflo et al. (2011)	Intervention (1) Providing free school uniforms; Intervention (2) training of three teachers per primary school to deliver the national HIV/AIDS curriculum that has a strong abstinence focus; Intervention (3) combining the two intervention.	19,000 upper primary school students in Western Kenya aged 13.5 on average.	Information and Opportunities / Aspiration	Intervention (1) reduces : i) dropout rate by about 18, ii) teen pregnancy; iii) teen marriage. No effect on risk of sexually transmitted infection (STI). Intervention (2) does not have any effects. Intervention (3) decreases i) STI for girls and ii) early fertility (but less then interevntion (1)).	"Quasi experiment, Cluster randomized control trial. Evaluation on the schooling, marriage, and fertility of these students over 7 years and tested them for HIV and HSV2 after 7 years."

Another example of school-based intervention implemented in Kenya combines two modules. The first one aimed at reducing the cost of schooling; the second one providing training to three teachers per primary school to deliver national HIV/AIDS curriculum, which has an abstinence-until-marriage message. The first module of the intervention subsidized education through the provision of free school uniforms for 19,000 upper primary school students in Western Kenya, aged 13.5 years on average.

Conversely to the Chilean intervention, this program represents an example of a multi-dimensional approach aimed at reducing teenage pregnancy and the risk of sexually-transmitted diseases (potentially) through both the information and the opportunity pathways. Indeed, lowering the cost of education might increase school attendance, which in turn might increase the opportunity cost of getting pregnant, affecting aspirations, and reducing the probability of engaging in risky behavior.

In 2011, Duflo and colleagues evaluated this program on the schooling, marriage, and fertility of the targeted students over seven years, and tested them for HIV and HSV2 after the seven-year period. To do so, the study exploited the random assignment of the free-uniform component of the program and the HIV-prevention education curriculum. The authors find that the education subsidy reduced the dropout rate by about 18 percent, led to a significant reduction in teen pregnancy and teen marriage, but did not reduce the risk of sexually-transmitted infections. The combination of the education subsidy and the HIV module led to a decrease of sexually-transmitted diseases for girls but to a smaller decrease in early fertility than the subsidy alone. On its own, the HIV module did not have any effects. As Duflo and colleagues suggest, these results are "consistent with a model of sexual behavior and schooling decisions where girls choose whether to have casual or committed relationships and teenage pregnancy may be a comparably desirable outcome for girls who cannot continue their education."

4.2.2 Peer education

The reproductive health programs using peer promoters constitute another type of school-based interventions (Table 23) that have the potential to influence agency. The distinctive characteristic of these programs is that the educators/counselors have the same age and similar background characteristics as the adolescents targeted. In most cases, the counselors are not professionals but are trained to assist young people who need reproductive health information and services.

The reasoning behind peer educators is that generally young people relate well to people similar to them in age, background, and interests, in addition to ensuring that the language and messages used are relevant and appropriate. Moreover, this kind of programs

might have positive spillover effects given the direct involvement of young trainers, who might obtain positive impacts on their personal development. Indeed, they might be more likely to engage in safe and responsible behaviors themselves; they might develop new skills and deliver positive messages, not only to the targeted population but also to other peers, relatives, and in the community where they live.

An example of a peers' education program is the one implemented in Bangladesh in 2003, whose effects on contraceptive use have been evaluated using a difference-in-difference approach by Bhuiya et al. in 2004. The intervention combined multiple modules targeting 6,000 adolescents between the ages of 13 and 19 both in-school and out-of school. The intervention lasted two years, consisting of three components: i) reproductive health education provided to adolescents at school, ii) training at health facilities with the objective of making their service provision more adolescent friendly, and iii) some community support activities to reach out-of school adolescents. The first intervention (intervention A) combined components one and three; the second intervention (intervention B) linked components two and three.

The program aimed to provide information on reproductive health and the use of contraceptive methods. The involvement of peer educators was expected to increase the effectiveness of the education modules but it was also thought that it might affect norms and expectations providing adolescents with positive role models. Bhuiya et al (2004) find that, in general, intervention B (making health services more adolescent-friendly and increasing community activities for out-of-school adolescents) was more effective than intervention A (health education for adolescents at school, and community activities for out-of-school adolescents). In particular, intervention B was found to increase contraceptive awareness and incentivize a positive attitude towards the use of contraceptive methods among married adolescents.

A similar intervention took place in Zambia, which was evaluated by Agha in 2004. The intervention consisted of a single session of sexual health education delivered by peer educators to secondary school students (both male and female) in grades 10th and 11th (students aged 14-23). The focus of the intervention was on sexual behavior, normative beliefs and risk perceptions.

The program was evaluated using a quasi-experimental approach, comparing students in three targeted schools and students in two control schools; immediately after the course, and six months later. According to Agha's findings, the students' self-reports show positive changes, becoming more likely to approve the use of condom and intending to use condoms, immediately after the intervention. The positive outcomes, however, are not sustained six months after the intervention had passed. Moreover,

TABLE 22. SOME EVIDENCE FROM SCHOOL-BASED PROGRAMS

Author	Mechanism	Interventions	Target Population	Findings	Evaluation Strategy
Bhuiya et al. (2004)	Information and Environmental Factors (Social Norms, Role models)	i) Reproductive health education provided to adolescents; ii) training at health facilities to make their service provision more adolescent friendly; iii) community support activities	Bangladesh. T1: Targeted out of school adolescents between the ages of 13 and 19. T2: targeted both in-schol and out-of-school adolescents between the ages of 13 and 19.	It increases contraceptive awareness and attitudes towards contraceptive use among married adolescents	Quasi-experimental, difference in differences
Agha (2004)	Information and Environmental Factors (Social Norms, Role models)	A single session of sexual health education delivered by peer educators	Zambia. Secondary School Students: Male and female adolescents in grades 10 and 11 (ages 14-23)	i) More likely to approve of condom use and to intend using condoms immediately after the intervention but not during the 6 months that followed the intervention. ii)Reductions in multiple regular partnerships. Iii) No change in condom use.	Quasi-experimental, longitudinal panel design.
Cartagena (2006)	Information and Environmental Factors (Social Norms, Role models)	Peer education covering: 1) Reproductive health; 2) AIDS and STI transmission, symptoms and prevention; 3) Safe sex including how to use condoms; 4) Discussions and interactive communication through skills-based learning about emotions, refusal skills, love, friendship. The training is given over a three day period.	Mongolia. Grade 10 students between the ages of 15 and 19 who attended school.	i) treated group has more knowledge, higher attitude and self efficacy levels than control group. ii) In schools in socioeconomically advantaged areas are more likely to use a condom	Matching at the school level. Cross Section - not repeated

although students report reductions in multiple regular partnerships, there is no reported change in condom use.

Another peer education program targeted students in the 10th grade, ages 15 to 19, in Mongolia. The education module covered: 1) reproductive health; 2) information on AIDS and sexually transmitted diseases, symptoms and prevention; 3) safe sex, including how to use condoms; 4) discussions and interactive communication through skills-based learning about emotions, refusal, love, and friendship. The training is given over a three day

period. The program was launched in Mongolia between 2000 and 2004. Survey data was collected among 720 randomly selected students from eight schools which received the peer education prevention program (treated group) and compared with those of 647 students from eight schools without the intervention (control group).

Using this data Cartagena et al. (2006) evaluate the program using a propensity score matching approach. The authors compare the knowledge level, attitudes, self-efficacy and safe sex practices of students from the treated group with those of students from the control group. They find that, on average, students in the treated group had knowledge, attitude and self efficacy levels statistically higher than those of students in the control group.

4.2.3 Contraceptive use

As discussed earlier in this report, limited access to contraceptive methods is one of the risk factors for teenage pregnancy, particularly when teens have sex for the first time. Making contraceptives available to young people might be important to reduce adolescents' sexual risk behaviors. In section 4.2.1, we reviewed some of the school-based interventions that look to impact young people's sexual behavior through an abstinence-only message, or to reduce (the unintended) pregnancies by increasing the adolescents' awareness of contraceptives and knowledge about reproductive health. The information component of these interventions might increase the use of contraceptive methods but it might also enhance the effectiveness of the use of such methods. In both cases, interventions would be affecting fertility choices through increased agency.

In some cases, sexual education interventions have mixed the information component with an "accessibility component", for example through the provision of contraceptives (usually condoms). Unfortunately, many of these interventions are designed in such a way that it is impossible to disentangle the potential effect of each component on teenage fertility. For this reason, the few impact evaluations available for these kinds of programs present serious methodological concerns. The findings from these studies make up rather low-quality evidence, which in our opinion, cannot be considered as the base of a policy dialogue on teenage pregnancy, and are thus not discussed in this report.

On the subject of contraception use, it is worth mentioning that the qualitative evidence from Ecuador, presented earlier in the report, highlights that one of the main obstacles to the use of contraceptive method refers to accessibility. Many young people are hesitant to buy condoms to protect themselves against sexually transmitted diseases because they report to be "too embarrassed". This suggests that social norms (mostly related to gender norms) and intangible factors, such as self-efficacy, play a crucial role; and in some cases,

become an obstacle to having protected sexual relations, and ultimately preventing unintended pregnancies.

Furthermore, it is remarkable that most of the interventions aimed to enhance the use of contraceptives methods focus only on the provision of condoms. Recently, the debate has switched on the importance of promoting female-controlled contraceptive methods (such as female condoms, pills, diaphragm, cervical cap etc.) for which girls hold the control of.

Certainly, the decision to utilize a contraceptive method depends on many factors, including the perceived risk of becoming pregnant and the desire to avoid it, knowledge about the existence of the contraceptive method and the way it works, side effects, cost, self-efficacy, among others. Nevertheless the need for confidentiality seems to be an important one. Confidential and low-cost contraceptive services would ensure that sexually active teens have what they need to protect themselves and their partners from the risk of unintended pregnancy and the risk of sexually transmitted diseases.

4.2.4 Extended school-hours programs

In the United States, social programs that increase the number of school-hours for students have been used to influence risky behaviors among teens, prevalently to reduce juvenile delinquency. Jacob and Lefgren (2003) find that teenagers were 14 percent less likely to be involved in property crime on days when schools were in session relative to certain types of school holidays. To do so, they use data on daily measures of criminal activity and detailed school calendar information for 29 states of the United States. Their findings suggest that the school has an incapacitation effect (time-allocation change effect), reducing the incidence of certain types of juvenile crime. Spending more time in supervised activity reduces the time teens have to engage in risky behaviour.

Similarly, Berthelon and Kruger (2011) find that longer hours in school reduced teen motherhood in Chile. Their paper analyzed the effect of a nation-wide education reform that extended the school day, increasing the amount of time students spent in school by almost 22 percent—from 32 to 39 hours per week. Schools changed their systems from two half-day shifts to one full-day shift, hence the name *Jornada Escolar Completa* (full-day shift). The main objective of the reform was to improve school quality.

Berthelon and Kruger (2011) measure the short-run time-allocation change effect of the longer school day on risky behaviors that can result in pregnancy. Since they analyze its short-run impact, any effect of the reform is likely arising from the fact that students spend a greater number of hours per day under adult supervision, limiting

the possibility to engage in risky sexual behavior that can result in pregnancy. The education reform was implemented gradually across Chile's 346 municipalities, due to infrastructure and financial constraints. The identification strategy of the study relies on this gradual implementation of the reform across regions, which is uncorrelated with adolescent motherhood.

The results of the study reveal important effects of the longer school day in reducing risk factors and increasing opportunities. *Teens living in municipalities with greater access to full-day high schools had a lower probability of becoming mothers*. The impact is both statistically and economically significant. *An increase of 20 percentage points in the municipal share of full-day high schools reduces the probability of motherhood in adolescence by 3.3 percent*. Since the implementation of this reform, teenage motherhood has declined by 31 percent, as full-day coverage has increased by 65 percentage points. The reform therefore accounts for approximately one third of the reduction in adolescent motherhood in Chile.

These results hold important messages and policy implications. First, while the full-day reform has been criticized for its meager impact on standardized test results (Valenzuela, 2005; Garcia, 2006; Bellei, 2009), the study finds evidence of *important social returns on the reform through the reduction of adolescent motherhood, which should improve the future economic opportunities* of Chilean youth. Second, a significant heterogeneity exists in the impact of the reform, with the strongest impacts occurring among poor, urban young women. This vulnerable population is the target of other government poverty alleviation programs. Through its *impact on teen motherhood, the full-day reform has resulted in an improved economic outlook for underprivileged teenagers, which in the long run may contribute to reduce inequities in the labor market opportunities for high versus low-income young women*. Third, the study sheds light on how adolescents react to time constraints and regulatory changes in their environment. It also highlights the non-academic role that schools play in the lives of underprivileged youths. Finally, it is worth noting that the quality of schools matters. Indeed, spending more time in a poor quality school may reduce the return of the investment in education–ultimately reducing the opportunity cost of engaging in risky behaviours—thus raising the probability of engaging in risky behaviors.

4.2.5 Conditional Cash Transfer Programs

Few studies investigate the potential effect of CCT programs on the adolescent fertility rate, even though CCTs constitute one of the most popular policy initiatives in Latin America within the last 20 years. The lack of rigorous inquiry into the impacts of CCTs on adolescent pregnancy is surprising. Indeed, theoretical arguments abound, and render plausible both a negative and a positive effect.

A positive effect could be triggered through increased school attendance. Most CCT programs require that beneficiary families achieve at least 80 percent school attendance of their children. Increased school attendance may lower adolescent pregnancy mechanically: by having to spend much of their time at school, adolescents will have less time and opportunities to engage in risky sexual behavior. On the other hand, adolescent pregnancy is frequently associated with poverty, and may be an optimal utility-maximizing solution in circumstances where professional and educational opportunities are beyond one's reach. In such a setting, an increased opportunity to attend school may trigger a change in preferences and a conscious decision to delay childbearing. Finally, through the requirements of attending health-checks regularly, CCT programs may indirectly increase the knowledge about contraception for the entire family. In this sense, CCT programs have the potential to affect fertility choices through all mechanisms, increasing opportunities, assets and agency.

Opponents frequently voice concerns that CCT programs create incentives to have more children. If such an effect indeed takes place (no rigorous evidence exists for increased fertility as a consequence of CCTs), adolescent pregnancies may increase just as overall fertility does. CCTs would lower the costs of bringing up a child—such cost being a conceivable incentive for delaying childbirth—at least in the short run.

In this section we review evidence from four different CCT programs: *Familias en Accion* and *Subsidio Educativo* in Colombia, *Juntos* in Peru and *Bolsa Familia* in Brazil. Table 24 summarizes the results found for these programs; while additional information about evidence from other countries is included at the end of this section.

Cortes et al. (2011), analyze the causal impact of the two education CCT programs, *Familias en Accion* (FA) and *Subsidio Educativo* (SE) on teenage childbearing, using a new database of schoolgirls in Bogota, Colombia. Both programs condition targeting for girls younger than 18, use the same eligibility criteria and are similar with respect to the size of the subsidy. They both have as minimum conditionality school attendance but they differ in two crucial aspects: the assignment criteria and the performance requirements to comply with the program. FA is targeted at the poorest households (SISBEN level 1) while SE goes to the not-so-poor households (SISBEN level 2). Regarding the conditions to comply, the SE program links renewal to school success while the FA views school attendance as sufficient to receive the subsidy, regardless of success in the previous year. A final difference is that SE provides money for only two years while FA has no limit other than age.

Cortes et al estimate the effects of the two CCTs using a difference-in difference approach, taking advantage of the existence of schools with high and low-intensity treat-

ment. Indeed, they define the treatment variables at the school level, distinguishing between schools with high treatment and schools with low treatment (where the proportion of girls receiving the programs is higher/lower than the average of the other schools). According to their findings, SE reduces teenage pregnancy by one to two percent, while FA has no average effect on pregnancy rates.

As part of the present report, Lopez-Calva and Perova (2012) investigate the effect of the CCT program *Juntos* in Peru, on teenage fertility. The beneficiaries of *Juntos* receive about $25 per month, every two months, as long as they comply with a set of educational and health conditions, which vary depending on the age and gender of the recipient. Children under five years of age have to attend regular health and nutrition controls (for periodic monitoring of height and weight, complete series of vaccinations, iron and Vitamin A supplements and anti-parasite checks). Children between six and 14 years, who have not completed primary schooling, should attend school for at least 85 percent of the school year. Finally pregnant and breast-feeding mothers have to attend prenatal and post-natal checks (tetanus vaccination, folic acid and iron supplements and anti-parasite checks).

Eligibility of the households is determined as the result of a three-stage process. Districts are selected to participate in the program on the basis of the following five criteria: (i) exposure to violence during *Sendero Luminoso* guerilla; (ii) poverty level, measured as the proportion of population with unsatisfied basic needs; (iii) poverty gap; (iv) child malnutrition level; and (v) poverty severity.

The approach used in the analysis of this CCT is similar to the one used by Cortes et al. (2011), with the treatment defined at the district level. In all specifications used, for every additional year that a district spends in *Juntos, the incidence of adolescent pregnancy decreases in that district between seven and 10 percentage points*. The study explores the potential heterogeneity in the impact of the *Juntos* program depending on age, ethnicity, marital status and employment. The results indicate that the effect of the program does not differ significantly with age or ethnicity. Conversely, they find that the impact of the program is lower among women who work full-time—probably the group that is the least likely to benefit. Finally, adolescents who marry are much more likely to experience a pregnancy. Nevertheless, while a married adolescent is, on average, 24 percentage points more likely to experience a pregnancy, this likelihood decreases by 11 percentage points if she has spent a year in a district incorporated into the Juntos program.

The effect of *Bolsa Familia* on teenage early childbearing in Brazil is explored by Azevedo and Favara (2012), as part of the present report. *Bolsa Familia*, similarly to its Peru-

TABLE 24. SOME EVIDENCE FROM CCT PROGRAMS

Author	Interventions and Conditionality	Target Population	Findings	Evaluation Strategy
Cortes et al. (2011)	Bogota (Colombia). CCT program Familias en Accion (FA) and Subsidio Educativo (SE). Conditionality SE: school attendance + school success (pass to next year). Conditionality FA: school attendance regardless of success in the previous year.	Population younger than 18; FA is assigned to the poorest households (SISBEN level 1) without time limits and SE goes to the not so poor households (SISBEN level 2) only two years.	SE reduces teenage pregnancy by 1 to 2 percent while FA has no average effect on pregnancy rates.	Difference-in-Differences approach taking advantage from the existence of school with high and low intensity treatment. Treatment variables defined at the school level: treated group (high proportion of girls receiving the programs) and control group (low coverage at school level).
Lopez-Calva and Perova (2012)	Peru. CCT program Juntos. Transfer of about $25 per months every two months. Conditionalities: Children under 5: regular health and nutrition controls; Children aged 6 - 14 and primary school incomplete: attend at least 85% classes. Pregnant and breast-feeding mother: prenatal and post-natal checks.	Eligibility of the households is determined as a result of a three-stage process. First, districts are selected to participate in the program on basis of the following five criteria: (i) exposure to violence during Sendero Luminoso guerilla; (ii) poverty level, measured as a proportion of population with unsatisfied basic needs; (iii) poverty gap; (iv) child malnutrition level; and (v) poverty severity.	Every additional year a district spends in Juntos, the incidence of adolescent pregnancy decreases in that district between 7 and 10 %. Not heterogeneous effect by age or ethnicity. The impact of the program is lower among women who work full-time.	Difference-in- Differences approach. Treatment is defined at district level.
Azevedo and Favara (2012)	Brazil. CCT program Bolsa Familia. T1: monthly transfer of 22 reais (about $12 USD) for each child living in the household till a maximum of three children. T2: additional flat transfer of 68 reais (about $33 USD). No time limit as long as they are eligible. Conditionality: children under 17 to attend school and to assist to at least 85 % of the classes for children under 14; and to at least 75 % for children aged 15 to 17. Children under 5: mother attend health workshop before and after pregnancy and make their children vaccinate until the age of 5.	T1: poor families with children among 0 and 17 years old and living with a monthly per capita income lower than 40 reais (about $20 USD). T2: extreme poor families (total income lower than 70 reais, about $35 USD)	Preliminary results : Bolsa Familia negatively associated teen childbearing during the period considered and in particular among teenagers aged 16 to 19.	Study association between Bolsa Familia and fertility using vital statistics and a pooled regression approach at municipality level (period 2004 and 2008)

TABLE 24. SOME EVIDENCE FROM CCT PROGRAMS (CONT.)

Author	Interventions and Conditionality	Target Population	Findings	Evaluation Strategy
Alam and Carpio (2010)	Pakistan. CCT - Conditional on female attendance in middle school; approximately US$10 distributed quarterly per female student. Conditionality: minimum school attendance rate of 80 percent.	Girls in grades 6 through 8 in districts with lagging literacy rates. Payment was conditional on a minimum school attendance rate of 80 percent.	Short term impacts on female middle school enrollment rates (9 % more for eligible girls); more likely to progress through and complete middle school and are less likely to work. Delay in marriage of 1.2-1.5 years across girls aged 15-19. Girls between the ages of 17 and 19 who had children on average had 3 fewer children as compared to the control group. The impacts persist five years out.	Regression Discontinuity Design and Differences-in-Differences
Baird et al. (2009)	Malawi. CCT - Conditional on female attendance in secondary school; approximately US$10 distributed monthly per female student, plus the direct payment of secondary school fees. Conditionality: school attendance.	Young women in Malawi who are currently in school or have recently dropped out of school between the ages of 13 and 22 who have never married.	Among those girls who stay at school for all the period: reduction in dropout rate by 3.9 %; have less sexual partners on a weekly bases and lower likelihood of having an older sexual partner. Among participants that had dropped out of school at the time of the initial data collection: rate of marriage decreases by 30-40% ; by 5.1 % decrease in the rate of becoming pregnant in 1 year period and -25% lifetime partners. No impact on "never having sex" for both groups. Decreasing in the onset of sexual activity by 2.5-5.5 %.	RCT, Difference-in-Differences

vian counterpart, is targeted to poor families with children between zero and 17 years old, living on a monthly per capita income lower than 40 *Reais* (about $20 USD). These families receive a monthly transfer of 22 *Reais* (about $12 USD) for each child living in the household, for a maximum of three children. In addition to the basic transfer, extremely poor families (with a total income lower than 70 *Reais*; about $35 USD) receive an additional flat transfer of 68 *Reais* (about $33 USD). Families remain in the program while their income is lower than the eligibility criterion. In other words there is no limit to the permanence in the program as long as families are eligible.

Similarly to other programs in the region, such as *Juntos* in Peru and *Progresa* in Mexico, the beneficiaries of *Bolsa Familia* receive the transfer as long as they comply with a set of educational and health conditions. The first conditionality requires children under 17 to attend school and to assist to at least 85 percent of the classes in the case of children under 14, and to at least 75 percent in the case of children aged 15 to 17. Another set of conditionalities is designed for the mothers of children under five year of age, who have to attend health workshops before and after pregnancy, and have their children vaccinated until the age of five.

Azevedo and Favara explore the association between receiving the *Bolsa Familia* benefit and teen fertility, using vital statistics and a pooled regression approach. More specifically, they estimate the number of births during the period 2004-2008 at the municipality level, as a function of the number of recipient households in each municipality. The study controls for the total fertility at the municipality level *F* to take into consideration potential demographic changes, time trends and municipality unobservable characteristics using time and municipality fixed effects. The preliminary results suggest that *Bolsa Familia* is negatively associated to teen childbearing during the period considered, particular among teenagers aged 16 to 19.

The evidence discussed above suggests that CCTs might constitute an effective instrument to reduce teenage childbearing. However, the mechanisms behind the results are still debatable. A positive effect might be triggered by increased school attendance which, in most cases, is the condition families must meet to receive the transfer. According to Cortes et al. (2011), the effect of educational CCT programs depends on the definition of conditionality. Indeed, they find that both *Subsidio Educativo and Familias en Accion* are effective in increasing school enrollment (consistently to what Attanasio et al. (2010) and Barrera et al., (2011) have found). However, according to the results of Cortes et al. (2011), *Subsidio Educativo* reduces teenage pregnancy by one to two percent while Familias en Accion has no average effect on pregnancy rates. They argue that the success of *Subsidio Educativo* is due to the definition of conditionality used in this program. Their study suggests that after controlling for other factors, the imposition of a performance requirement is the key to the *Subsidio Educativo* program, providing students with enough incentives to reduce teenage childbearing. Solely requiring school attendance, like *Familias en Accion*, has no effect on teenage childbearing.

Similarly, Lopez-Calva and Perova (2012) indicate that school attendance is one of the plausible mechanisms responsible for the observed decrease in fertility among the *Juntos* beneficiaries. They find that the *Juntos* program indeed increases average school attendance in the district. However, it is not clear which are the channels through which the increased school attendance reduces teenage pregnancy.

Thus, reinforcing the ideas presented above: there are at least three channels between increased school attendance and reductions in teen pregnancy—within the framework of increased opportunities, assets and agency. As mentioned, school attendance may lower adolescent pregnancy mechanically—by having to spend much of their time at school, adolescents will have fewer opportunities to engage in risky sexual behavior. On the other hand, adolescent pregnancy is frequently associated with poverty and may be an optimal utility-maximizing solution in circumstances where job and educational opportunities are beyond reach. In such settings, the opportunity to attend school may

trigger a change in preferences and a conscious decision to delay childbearing. Finally, through the regular health-checks requirement, CCT programs may indirectly increase the contraceptive knowledge for the entire family. Further investigation on the specific mechanisms is needed.

4.2.6 Evidence of youth training programs affecting teenage pregnancy

Other policies that might prevent teenage pregnancy involve youth training programs targeted towards less educated adolescents who face serious obstacles to entering the job market, increasing opportunities and agency. These programs usually combine classroom sessions with subsequent on-the-job training.

A recent paper by Ibarraran et al. (2012) evaluates the Dominican Republic's *Youth and Employment Program (Juventud y Em pleo, JE)* on a wide set of labor outcomes, expectations about the future, socio-emotional skills and youth behaviors that include teenage pregnancy. The study is particularly relevant given the high incidence of teenage pregnancy in the Dominican Republic. Designed in 1999, the program targeted youngsters between 16-29 years old. The study focuses on the cohort with an average age of 22, which applied in 2008 to receive training.

The authors estimate the 'Intention to Treat Effect', which measures the impact of offering the JE program regardless of what happens after the random assignment. They find mixed results on the labor market outcomes but a significant negative effect on the probability of becoming pregnant. The program reduces this probability by two percentage points on average for "treated" women. The effect is stronger (5 percent points) for the group of females between 16 and 19 years old.

The reduction in the pregnancy rate is consistent with the program's positive impact on youth expectations about their future reflected in positive behavioral changes and agency. On average, individuals in the treatment group, especially females and younger individuals, have higher expectations about their future within 20 years in terms of: having a better life, living in a better neighborhood, owning a business, and moving up the wealth ladder. The positive effects on perceptions and expectations about the future is particularly strong for young women who benefit the most in terms of reducing the risk of becoming pregnant as an adolescent.

4.2.7 Teenage pregnancy and early child bearing: Towards a comprehensive policy

As shown in Figure 26, and as the evidence of past experiences discussed in this section indicates, there are many risk factors and mechanisms through which adolescents' behaviour might be influenced. The complexity of teenage fertility decisions suggests that a multi-sectoral approach might be more effective that single interventions in reducing the adolescent fertility rate and in helping mitigate the adverse consequences of teenage pregnancy. The need for a multi-sectoral approach originates from the nature of the fertility decision. As noted, the risk factors are closely intertwined and strategic investments must be made to curb the multiple vulnerabilities that place girls at the risk of unintended pregnancies.

The ideal program would engage two or more of the sectors that are central to young people in the transition into adulthood, for example health, education, and civic engagement. In multi-sectoral programs each intervention plays a role in improving outcomes in the other sectors.

Learning from previous experiences might help to navigate the complex plot of confounding factors, psychological and behavioral traits and tangible and intangible barriers. Strategies to reduce the number of pregnancies among adolescents could include:

- Improving girls' economic opportunities;
- Providing adolescents with positive role models;
- Expanding access to youth-friendly reproductive health services;
- Supporting comprehensive sexual and family life education;
- Promoting programs that keep girls in school;
- Expanding interventions that delay marriage in incentive-compatible ways;
- Targeting gender inequalities.

As discussed above, the prevalence of teen mothers among the poorest encourages policymaking to address difficult social problems; in particular to widen the set of opportunities for those who view having a child as their only path of social mobility.

4.3 POLICY OPTIONS TO SUPPORT TEEN MOTHERS

As highlighted previously, teenage pregnancy occurs more likely among the poorest. The mother suffers disproportionately the burden of early childbearing rather than the father of the child. From an equity perspective, helping teen mothers to cope with the new challenge probably carries essential long-run effects.

Far from being exhaustive, the present section aims to present some examples of interventions implemented in LAC to support teen mothers. In most cases, these programs offer psychological support and counseling to help teen parents come to terms with their significant life changes. Other interventions aim to reduce the cost of teenage pregnancies and to assist adolescent mothers attend school and reconcile the value of their education with their new responsibilities.

Teen mothers are more likely to suffer psychological and mental health problems than women who wait until adulthood to become parents. Counseling and support groups help them improve and understand their relationships with their child and family through psychological support and mentoring. Other interventions such as childcare programs and educational scholarships can reduce the probability of dropping out of school and increase the future economic opportunities for these vulnerable mothers.

In LAC, little evidence exists of centralized programs to help teenage mothers and in most cases, ex-post evaluations have not been carried out. Most support (counseling centers, mentoring, psychological support, childcare, and flexible school-hours programs) occurs at the local level through the efforts of community organizations, women associations and NGOs. Some exceptions stand out. For example, in Mexico (2005-2007) the Ministry of Education (*Secretaria de Educacion Publica*) instituted a Scholarship Program to Support Basic Education for Young Mothers and Pregnant Youth (*Promajoven*). The program targeted teen mothers between 12 and 18 years old with a particular focus on mothers with low economic resources, to increase their school enrollment and attendance. In some cases, scholarship renewal is conditional on attendance while in others it is on academic performance.

The Ministry of Education in Chile implemented a similar program between 2000 and 2003. The *Programa Liceo Para Todos* targeted students at risk of dropping out of school, particularly those attending schools considered as riskier. The program defined the student's risk indicator on the basis of school attendance, the grades received in the previous semester and their "over-age" (i.e. the difference between their age and the regular age for those enrolled in the same grade). It defined the school's risk indicators based on the grade repetition rate, attendance rate and the average education

of the students' mothers. The program proved particularly effective in reducing the probability of leaving school for those students considered at a higher risk (about 28 percent less dropouts). It had no significant effects, however, on those considered as low risk (about 2 percent less school dropouts) (Infante and Gazmuri, 2004).

As shown in Chapter 3 in this Report, intergenerational welfare consequences of teenage pregnancy can be ameliorated if the socioeconomic conditions of children born from teenage mothers are improved. Given the very high correlation between early child bearing and poverty, and the fact that the effects of teenage pregnancy on children can be reversed, it is useful to think of interventions that target households of teenage mothers and carry out interventions to improve the conditions in which children are raised, through nutritional and educational programs.

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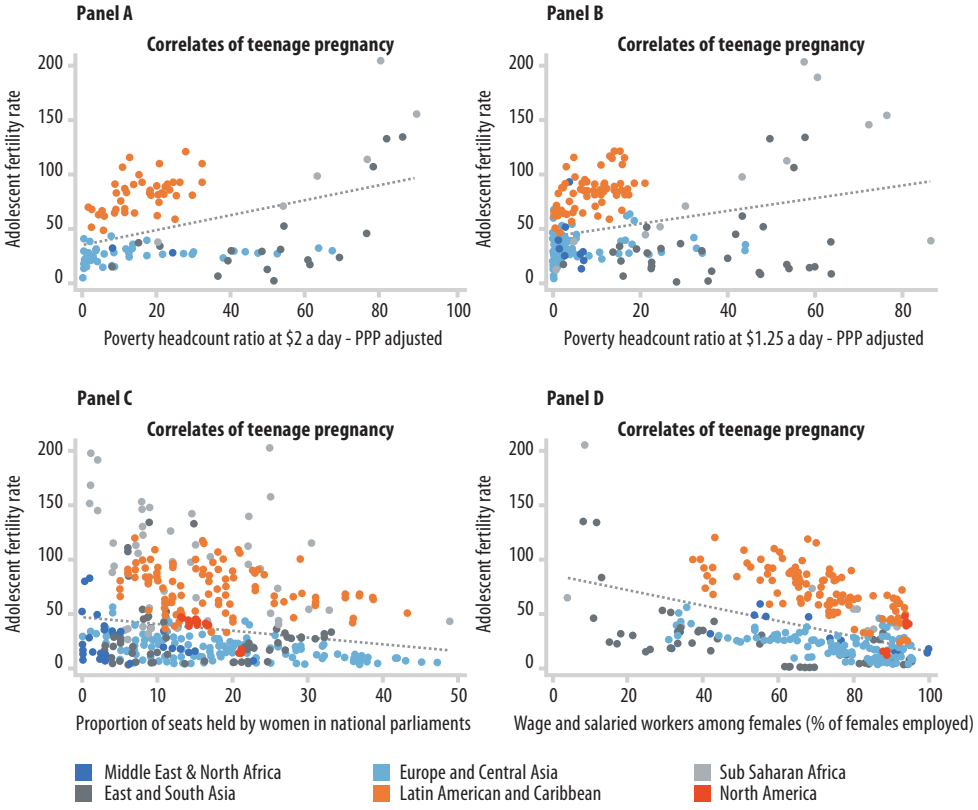
Appendix

TABLE A1. ADOLESCENCE FERTILITY RATE IN LAC (2000-2009)

	Adolescence fertility rate		Ranking			
	2000	2009	2000	2009	change 2000-2009	change 2000-2009 (%)
Nicaragua	124.68	107.99	1	1	6	11
Dominican Republic	110.16	105.65	2	3	9	14
Guatemala	117.68	104.31	3	2	20	21
Honduras	107.34	88.76	4	4	3	8
Venezuela, RB	92.90	88.36	5	7	2	4
Ecuador	84.86	81.45	6	13	1	1
El Salvador	99.74	78.77	7	5	19	19
Panama	90.68	78.57	8	8	12	13
Bolivia	85.40	76.12	9	12	7	7
Brazil	87.48	75.81	10	10	11	9
Jamaica	88.65	72.76	11	9	5	6
Colombia	94.10	70.61	12	6	13	15
Paraguay	86.14	68.95	13	11	21	20
Mexico	75.74	67.54	14	15	4	3
Costa Rica	80.61	63.42	15	14	15	17
Uruguay	65.02	59.86	16	17	8	5
Chile	63.72	56.89	17	19	17	18
Argentina	64.34	55.27	18	18	14	10
Peru	65.10	51.12	19	16	16	16
Haiti	56.22	43.31	20	20	10	2
Trinidad and Tobago	38.05	32.86	21	21	18	12

Source: Data from WDI 2009.

FIGURE A2. ADOLESCENT FERTILITY RATE AND SOCIO-ECONOMIC CHARACTERISTICS IN LAC



Source: PAHO, 2005.

TABLE A3. THE CONSEQUENCES OF TEENAGE PREGNANCY

I. Consequences for the mother

Early literature, using simple OLS, found large negative consequences for teenage motherhood on outcomes for the mother. Recent literature has focused exclusively on identifying a causal effect and estimating a size of effect.

There are three main identification strategies:

1. SISTER- OR COUSIN-FIXED EFFECTS

Paper	Country	Methodology	Main result	Other result
Geronimus and Korenman (1992) "The Socioeconomic Consequences of Teen Childbearing Reconsidered," *QJE*.	US, National Longitudinal Survey Young Women's Sample (NLSYW) 1968-1982, the Panel Study of Income Dynamics (PSID) 1968-1985., and the National Longitudinal Survey Youth Sample (NLSY) 1979-1988.	Control for family background heterogeneity: "within-family" estimation: differences in subsequent socioeconomic status of sisters who experienced their first births at different ages.	Compare sisters who time their births at different ages, the estimated effects of a teen birth on most indicators of socioeconomic status narrow further in the two NLS samples, but not in the PSID sample.	Controlling for race, age, rural status only, there are substantial differences on income and high school and post-HS education. Add: of family background, estimates decline substantially but remain sizable.
Hoffman, Foster and Furstenberg (1993) "Reevaluating the Costs of Teenage Childbearing," *Demography*.	US, Panel Study of Income Dynamics (PSID) 21and 33 in 1987	Compare teen mothers with their sisters.	Selectivity effects are important and the negative effects of teenage childbearing have been overstated.	The effects of teenage childbearing do not disappear, especially for economic status (poor, middle class), but also for high school graduation.
Holmlund, H. (2005), "Estimating Long-Term Consequences of Teenage Childbearing: An Examination of the Siblings', *JHR*	Sweden, 20% random sample of each cohort born in 1974-77	Revisit the within family estimation: control for heterogeneity within the family by controlling for pre-motherhood academic performance.	Findings confirm that within-family heterogeneity can result in biased sibling estimates (selection bias within the family): Controlling for diff between sisters reduces the effect on schooling from -0.93 to -0.59. =>penalty to teenage motherhood still significant.	Moreover, results show that when controlling for school performance, the siblings' approach and a traditional cross-section yield similar coefficients.

2. TWINS

Paper	Country	Methodology	Main result	Other result
Groger and Bronars (1993) "The Socioeconomic Consequences of Teenage Childbearing: Findings from a Natural Experiment", *Family Planning Perspectives*	US, census data from 1970 and 1980	Socioeconomic effects of un- planned teenage childbearing by comparing teenage mothers whose first birth was to twins with those whose first birth was to a single infant.	The effect on unplanned teenage childbearing: Black women, significantly lower rates of high school graduation and labor-force participation and higher rates of poverty and welfare recipient.	In agreement with, Geronimus and Korenman, there is an important source of bias in estimating the effects of unplanned teenage childbearing. But there is an effect.

3. INSTRUMENTAL VARIABLE MODELS

Paper	Country	Methodology	Main result	Other result
Hotz, McElroy and Sanders (2005), "Teenage Childbearing and Its Life Cycle Consequences: Exploiting a Natural Experiment", *Journal of Human Resources*.	US data, NLSY 14-24 year olds in 1979-1991	OLS, IV Miscarriage as an instrument	Negative effects of childbearing smaller than previous findings in the SR. Teenage mothers earn more on the labor market in the LR.	No effect on educational attainment (- ns), more GED Teenage mums work more hours after age 20, no effect on wages (effect decreases with age) Teen mothers receive fewer transfers.
Fletcher and Wolfe (2009), "Education and Labor Market Consequences of Teenage Childbearing Evidence Using the Timing of Pregnancy Outcomes and Community Fixed Effects," *JHR*	US, National Longitudinal Study of Adolescent Health (Add Health) in 1995, includes only women who were pregnant as teenagers.	Including community-level fixed effects and use of the timing of miscarriages to create better control groups.	Teenage childbearing reduces the probability of receiving a high school diploma by 5 to 10 percentage points, reduces annual income as a young adult by $1,000 to $2,400, and may increase the probability of receiving cash assistance and decrease years of schooling.	Miscarriages are not random events, but rather are likely correlated with (unobserved) community-level factors.
Klepinger, Lundberg and Plotnick (1999), "How Does Adolescent Fertility Affect the Human Capital and Wages of Young Women?" *JHR*	US, NLSY, women aged 14-21 in 1979-1991	Life-cycle model of adolescent choices and IV using state and county indicators of costs of fertility and fertility control (abortion and family planning policies).	Teenage childbearing substantially reduces future labor market outcomes for mothers because they accumulate less years of education and less work experience (outcomes measured by wages at age 25). However, early child bearing does not change the rate of return from these investments.	The negative wage effects are substantively important: teenage childbearing reduces white women's wages by 23 percent and black women's wages by 13 percent. If we control for the endogeneity of fertility and human capital investment, the estimates become even larger.

Other identification strategies:

- SIMULTANEOUS DECISIONS

Paper	Country	Methodology	Main result	Other result
Ribar (1994) Teenage Fertility and High School Completion, *REStat*	US, National Longitudinal Survey Youth Sample (NLSY) 1979-85	Teen fertility and high school completion modeled as jointly-determined dichotomous variables (biprobit).	Hypothesis that teenage childbearing is an exogenous determinant of high school completion. Fail to account for endogeneity leads to an over-statement of the schooling consequences of early fertility.	Teen parenthood and school dropout stem from a common set of antecedents: Programs targeted at these shared antecedents may be reinforcing (Medicaid generosity, Educ. funding, availability of gynecologists, local abortion rates, family background, race, religiousness, and physical maturity).

- PROPENSITY-SCORE MATCHING

Paper	Country	Methodology	Main result	Other result
Chevalier and Viitanen (2003) " The long run labor market consequences of teenage motherhood in Britain," *Journal of Population Economics*	UK, National Child Development Study (NCDS), individuals born in Britain in March 1958	Rubin's (1983) propensity score matching technique.	The negative impact of teenage motherhood might have been previously overstated. Accounting for unobserved individual heterogeneity largely reduces but does not eliminate the negative effects associated with teenage motherhood.	Teenage childbearing decreases the probability of post-16 schooling by 12–24%. Employment experience is reduced by up to three years, and the adult pay differential ranges from 5% to 22%.
Levine and Painter (2003), "The schooling costs of Teenage out-of Wedlock Childbearing: analysis with a Within-School Propensity Score matching estimator," *Review of Economics and Statics.*	US, National Education Longitudinal Survey (NELS) of 1988	Parametric methods and a novel within-school semi-parametric method based on matching.	A substantial portion of the relation between teen childbearing and high school completion is due to preexisting disadvantages of the young women, not due to childbirth itself. At the same time, about half of the very large disadvantages remain using all methods regardless of controls.	Moreover, the causal part of the effect appears largest for the most advantaged mothers-to-be relative to the least advantaged.

II. Consequences of teenage fatherhood

There is very little research on this topic and articles mainly describe associations.

Paper	Country	Method	Main result	Other result
Card and Wise (1978) "Teenage Mothers and Teenage Fathers: The Impact of Early Childbearing on the Parents' Personal and Professional Lives."	US, TALENT database, grades 9,10 11 and 12 in the spring of 1960.	Descriptive statistics (matched sample = "control" for other variables)	Teenage childbearing results in greater educational deficits for young mothers and young fathers (the younger the parent, the stronger the effect). They hold more low-prestige jobs; have bigger families.	The effect holds even when we "control" for SES, academic achievement, aptitude and expectations.
Brien and Willis (1997) "Costs and Consequences for the fathers" in *Kids Having Kids* (KHK)	US, NLYS men aged 14-21 in 1979-1992, outcomes examined for everyone at age 27.	OLS, explicit controls	Entry into early fatherhood is associated with lower levels of schooling, lower actual occupational income, and fewer hours worked. The impact is reduced when we include controls (test scores, parental education). Effects are small (0.3 extra years of education for 4-year delay).	How responsible you are for the kid is crucial: unmarried men who conceive a child before age 18 have sign more years of education.
Nock (1998), "The consequences of premarital fatherhood," *American Sociological Review.*	US, NLYS 14-21 year olds in 1979-1993.	Hazard models and fixed effects.	Men who have children before marriage leave school earlier, lower earnings, work less per year and more likely to live in poverty.	These effects are partially observed because of self-selection, but the effect seems to come from delayed marriage and higher rates of cohabitation caused by teenage fatherhood.
SIGLE-RUSHTON (2005), "Young Fatherhood and subsequent disadvantage in the United Kindom," *JMar and Fam.*	UK, 1970 British Cohort Study, mothers and cohort through several years until age 30 (5121 men).	Propensity score matching	High level of self selection into early parenthood, there are still some significant differences in outcomes (even after matching): young fathers are more likely to be living in publicly subsidized housing or to receive benefits, to have a high malaise score at age 30. They have poor consumption outcomes. Married men at birth were more advantaged in some areas of social exclusion (housing, benefits and voting behavior). Unmarried father are least likely to report low life satisfaction.	Relation between young fatherhood and social exclusion as spurious as young motherhood, but unlike mothers, the consequences depend on the level of responsibility assumed by the parent.

Consequences for the children

- LINEAR REGRESSION MODELS

Paper	Country	Method	Main result	Other result
Levine, Pollack and Comfort (2004), "Academic and behavioral outcomes among the children of young mothers," *J Marr and Fam.*	US, NLSY aged 14-21 in 1979 until 1996.	Inclusion of explicit control variables to control for the effect of maternal background (OLS and Logistic regression).	When no controls for maternal socioeconomic background, being born from a teenage mother have a significant and negative effect on all academic (PPVT and PIAT test) and behavioral outcomes (early sexual behavior, self- reported truancy and repeating grades). However, when the SES variables are included, the effect on academic measures disappears implying that it is not a causal effect.	However, for early sexual initiation truancy and fighting the effect of teen motherhood survives inclusion of extensive background controls. Crucial variable: controlling for maternal test scores.
Grogger (2008), "Consequences of Teen Childbearing for Incarceration among Adult Children," *in HKH.*	US, NLSY 1979-1991 (individuals between 27 to 34 years old). Incarceration not self reported, interviews that were done in jail.	Multivariate analysis, probit model. Controlling for maternal age at first birth.	Causal effect of treatment: control for maternal at first birth and the effect of age at child's birth. Significant link: Delaying first birth beyond their 18th birthday would reduce her son incarceration risk by 6%.. In until 23, the risk would fall by 17%.	Early childbearing explain a small fraction of the difference in incarceration rates: if young teens delay until 23 their sons would be 2.2 times more likely to go to jail (instead of 2.7).
Haveman, Wolfe and Peterson (2008), "Children of Teen Mothers as Young Adults: Consequences of Teen Childbearing for the Life Chances of Children."	US, PSID 0-6 years old in 1968 and surveyed through 1988.	Explicit family background controls.	Being born form teenage mother have a negative consequences for her children: it reduces the likelihood of graduating from high school, giving birth as a teenager and being economic inactive by age 24.	The impact is more important for the child's educational level than for girl's fertility or child's economic inactivity (effect if very weak).
Moore et al. (2008), "Outcomes for Children of Teen Mothers from Kindergarten through Adolescence," *in KHK.*	US, Early Childhood Longitudinal Study, Kindergarten Cohort (ECLS-K) 5-6 year old in 1998-99. And NLSY, kids aged 12-16 in 1997.	Bivariate and multivariate analysis of age appropriate outcomes.	After controlling for family background, associations between teen parenthood and child outcomes are concentrated in the cognitive and academic areas (especially among kindergarten). But the effects for kinder kids is relatively small (1/10 SD).	Adverse effect of early childbearing on different types of academic outcomes is more often significant for children aged 4 to 14, than for 12 to 16, or18 to 22. But only repeated cross section needs panel!

- BROTHERS OR COUSINS COMPARISONS

Paper	Country	Method	Main result	Other result
Geronimus, Korenman and Hillemeier (1992), "Does Young Maternal Age Adversely Affect Child development? Evidence from Cousin Comparison," *Population and Development Review.*	US, NLSY 1979-1990, women aged 14- 21 in 1979.	Cousin difference or "within-family" estimation.	If no controls, differences in mean score favor children of non-teen mothers for all outcomes. When adding controls, the estimates decrease. When using the within family, the effect is reduced even more to the point where some effects favor children from teen moms.	Outcome variables: home environment (support in household, educational material etc.), test score (PPVT, PIAT), and behavior problems index.
Geronimus and Korenman (1993), "Maternal Youth or Family Background? On the Health Disadvantages of Infants with Teenage Mothers," *American Journal of Epidemiology*.	US National Longitudinal Survey of Youth (1979–1988).	Compare birth outcomes and maternal behaviors that could affect fetal or infant health among sisters to control for differences in family background.	They study the relation between maternal age and low birth weight, prenatal care, smoking and alcohol use during pregnancy, breast feeding, and well-child visits. The authors found evidence that maternal family background accounts for many of the health-related disadvantages of the firstborn infants of teenage mothers.	The findings suggest that disadvantaged black primiparous women in their twenties may be an important and possibly underemphasized target population for interventions designed to reduce excess black low birth weight and infant mortality rates.
Angrist and Lavy (1996), "The effect of teen childbearing and single parenthood on childhood disabilities and progress at school," *NBER WP*.	US, 1992 Current Population Survey, health and disability status of children aged 3-14 and 15-24 plus information about grade repetition.	Within families estimation, sibling comparison.	OLS and fixed-effects estimates show no significant link between maternal age and measures of child disabilities (maybe because of underreport?). The OLS do show that having a father in the household is associated with lower disability prevalence and fewer grade repetitions.	However, the effects of single parenthood on disability seem to be explained by higher incomes in two-parent families.
Ruth Lopez Turley (2003), "Are Children of Young Mothers Disadvantaged because of Their Mother's Age or Family Background?" *Child Development.*	US, NLSY 14-22 in 1979, their children assessed from 1986-1998 (children born at different times).	Cousin difference model (PIAT PPVT and behavioral problems such as depression, immature, peer conflict etc.).	Maternal age is not significant when we control for diff in SES. Effect of maternal age at first birth (unobserved characteristics leading to early motherhood) is more important for test scores and behavior than maternal age at child's birth (maturity) for subsequent children (not sig at all).	Maternal age is not significant to explain children's rate of improvement of their outcomes over time.
Francesconi (2008), "Adult outcomes for Children of teenage mothers", *Scandinavian journal of economics*	UK, British Household Panel Survey in 1991-1999	4 different: bounds around the true effect, non parametric mean differences, multivariate regression, and siblings differences model	Regardless of estimation technique: being born from a teenage mum is usually associated with worse outcomes as young adults: lower chance of high educational attainment, greater risks of inactivity an early childbearing, smaller probability of high income, and higher probability of low income.	Worse outcomes are observed if they grew up in a non-intact family, not so much with low income family. Plus, negative effects arise from women in their early 20's.

- OTHER

Paper	Country	Methodology	Main result	Other result
Rosenzweig and Wolpin (1995), "Sisters, Siblings and Mothers: The Effect of Teen-Age Childbearing on Birth Outcomes in a Dynamic Family Context", *Econometrica.*	US, National Longitudinal Survey of Labor Market Experience, young cohort (NLSY) 1979-85.	Statistical model of dynamic intra-family investment behavior with endowment heterogeneity to test different estimation procedures that use family data. Procedures: GLS, IV, sibling FE, cousin FE and sibling FE with IV.	Idiosyncratic or child-specific components sequentially influence resource allocation to pregnancies subsequent to the first. Consequences: estimates based on differences across siblings or cousins are biased. The least restrictive statistical formulation consistent with dynamic behavior and sibling's heterogeneity best fits the data. That procedure is sibling FE with IV.	to similar (but very imprecise) results: the biological effect of having a birth at a young age is to marginally increase birth weight (weakly significant) and fetal growth. Early childbearing reduces gestation (about 1 week for mothers under 18). Finally, mothers with propensities to have low-birth weight children are significantly more likely to have children when they are teenagers.

III. Consequences for the siblings/and parents

There is no economic literature in this topic. In the sociological literature: there is not a lot. An example is the paper by East (1996):

Paper	Country	Method	Main result	Other result
East, P. (1996), "Do Adolescent Pregnancy and Childbearing Affect Younger Siblings?" *Family Planning Perspectives.*	US, own survey (163 young sisters and 146 young brothers) between 1993 and 1995.	Univariate analysis and interviews across 3 groups younger siblings: 1* with pregnant older teen sister 2* with parenting older teen sister 3* with older teen sister who is neither of these 2.	Younger siblings with pregnant/parent. Sisters have different behavior, in particular younger sisters: career goals are less important, accept more early childbearing and perceive younger ages as appropriate for intercourse, marriage and birth, and more likely to engage in delinquent acts (fighting and stealing). Problems are higher for older pregnant than older parent Problems are higher for pregnant acceptance for early childbearing, stronger for girls with parenting older sisters.	For boys: no diff between pregnant/parent sister. They are diff from the boys with never pregnant teen sister: more accepting early childbearing and non- marital child bearing, lower self-esteem, more drug use.

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