Teen Mothers and Culture

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Abstract

This paper studies the impact of culture on the fertility decisions of adolescent women. To identify this effect, we use the epidemiological approach, exploiting the variations in fertility rates of teen women by ancestor's home country. All women considered in our analysis were born in the US, and all have lived under US institutional and legal conditions. Then, differences in fertility rates of adolescent women by national origin can be considered as supporting evidence of the impact of culture. Our results show that culture has quantitatively significant impacts on the fertility decisions of adolescent women. This finding is robust to alternative specifications and to the introduction of several home country variables and individual characteristics measured when young women take the decision to have a child.

Keywords: Fertility, Culture, Adolescent Women

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1. INTRODUCTION

During the last four decades, there has been a considerable decline in many countries in the number of young women giving birth. For example, in both Italy and Germany, the number of live births per hundred women under 20 dropped from 4.5 in 1970 to less than 1 in 2010 (UN Demographic Yearbooks). However, there are still developed countries that sustain high levels of teen motherhood rates, such as the UK, where this indicator reached the rate of 2.5 live births per hundred women under 20 in 2010 (UN Demographic Yearbooks). This is even more remarkable in certain less developed countries, such as Mexico, where the rate was 8.5 live births per hundred women under 20 in 2010 (UN Demographic Yearbooks). Although it constitutes a sizable percentage of total fertility, this is nevertheless a concern, due to the negative consequences for those countries. Teen motherhood can be associated with socio-economic disadvantages for women (Chevalier and Viitanen 2003) and their children (Francesconi 2008). Also, teen mothers have a higher probability of reducing schooling (Hofferth et al. 2001; Holmlund 2005; Klepinger et al. 1999), of having lower market wages when older (Chevalier and Viitanen 2003; Geronimus and Korenman 1992, 1993; Hoffman et al. 1993; Klepinger et al. 1999) and of being overweight (Webbink et al. 2008), than those women who delay motherhood (Miller 2011). Thus, the study of the determinants of teen motherhood is an important issue.

Researchers have examined several potential determinants of teen motherhood, focusing on institutional factors, such as changes in abortion laws (Donohue et al. 2009; Levine 2003), welfare reform (Lopoo and DeLeire 2006; Lundberg and Plotnick 1995), family planning policy (Lundberg and Plotnick 1995), and reforms in compulsory schooling legislation (Black et al. 2008). Research has also focused on family and socio-economic factors, such as family size and family structure (Cooksey 1990;

Hofferth and Goldscheider 2010), parental education (Cooksey 1990), maternal employment (Cooksey 1990; Lopoo 2004), family income (Aassve 2003; South 1999), neighborhood socio-economic disadvantages (South 1999), peer effects (Evans et al. 1992; Monstad et al. 2011), marriage and cohabitation expectations (Wolfe et al. 2007), income expectations (Wolfe et al. 2001; Wolfe et al. 2007), and racial differences (South 1999), among others. This paper explores the importance of culture on the fertility decisions of adolescent women.

Following the definition of culture proposed by UNESCO (2001), we consider culture as *the set of distinctive spiritual, material, intellectual and emotional features of society or a social group, that encompasses, not only art and literature, but lifestyles, ways of living together, value systems, traditions and beliefs*. Although most economic researchers would agree that culture is an important determinant of human behavior, it is not always possible to measure such beliefs and values directly. As Fernández (2007) argues, the interrelation among institutions, economic conditions, and social norms is the source of this difficulty. To isolate the impact of culture from the effect of institutions and markets on the fertility decisions of adolescent women, we explore the fertility behavior of adolescent women who were born and have lived in the US and report their ethnicity or national origin. The young women considered in our analysis were all born in the US, so that they have all lived under common laws, institutions, and markets. Then, dissimilarities in fertility rates by ancestor's home country may be considered to document the significance of culture since their attitudes are probably similar to the preferences of their parents, ancestors and ethnic communities.

We base our work on an epidemiological approach (see Fernández 2011; Fernández and Fogli 2009) to estimate the probability that an adolescent woman who was born and lives in the US and reports a national origin or ancestor's home country is a teen mother

using data from the National Longitudinal Survey of Youth 79 (NLSY79). Our findings point to culture being relevant factor in determining the fertility patterns of adolescent women, even after adding controls for an array of women's socio-economic characteristics. We find that, when the ancestor's home country live birth rate of women under 20 rises by one, the probability that an adolescent woman in the US is a teen mother rises by about 2.3%. Thus, an adolescent woman with ancestors from Cuba, the country with the highest live birth rate of women under 20, is around 16.5 percentage points more likely to be a teen mother than an adolescent woman from France, the country of origin with the lowest live birth rate of women under 20.

There is a substantial literature analyzing the impact of culture on socio-economic outcomes (see Fernández 2011; Guiso et al. 2006, for a review). Utilizing empirical strategies quite analogous to ours, researchers have explored the role of culture on savings rates, finding no effect (Carroll et al. 1994). They have also shown a significant effect of culture on female labor force participation and fertility (Antecol 2000; Fernández and Fogli 2006; Fernández 2007; Fernández and Fogli 2009; Blau et al. 2013), on living arrangements (Giuliano 2007), on unemployment (Brügger et al. 2009) and on divorce (Furtado et al. 2013). We contribute to these lines of research by exploring the impact of culture on the fertility decisions of adolescent women when they take the decision to have a child. [1]

In our main empirical analysis, we include controls for the socio-economic characteristics of teen women that are considered in the literature to be determinants of fertility decisions of adolescents. The NLSY79 also contains information on other potential determinants of the fertility decisions of adolescents, which we do not include in our main model because of endogeneity concerns. One of these determinants is the

[1] Prior literature on the effect of culture only uses information of individual characteristics when the sample was collected. In most cases, this does not coincide with the period in which the decisions are taken (see, for example, Furtado et al. 2013).

marital status of teen women. Since, in the period considered in this analysis, women who become pregnant at a young age tend to get married in a higher proportion than their peers without a child (Manning 1993; Parnell et al. 1994), then controlling for this endogenous factor would lead us to biased estimates. Being aware of these endogeneity problems, we have repeated the analysis, adding controls for these attributes at the individual level. Our results do not change substantially.

Additionally, we check whether unobserved heterogeneity across ethnic groups is driving our findings. For instance, it is possible to argue that differences in fertility of adolescent women across countries are due to variations in the age at first marriage preferences, rather than fertility culture. To take this issue into account, we add to our main analysis controls for home country characteristics, such as the average age of females at first marriage, per capita GDP, and the minimum legal age of consent. In all specifications, the estimated coefficient on the country of origin live birth rate varies very little. Further, we run placebo tests to check whether our results are driven by the fertility culture of adolescent women rather than other unobserved characteristics that can be correlated with our cultural proxy. If, for example, these unobserved variables, such as risk attitudes, differences in human capital accumulation, and social norms, were the main determinant of divergences in fertility behavior of adolescent women, we would expect them to also affect the fertility behavior of all women. However, in that case, we observe no impact of the national origin live birth rates of women under 20, indicating that we are not erroneously identifying the effect of culture.

The remainder of the paper is organized as follows. Section 2 presents the empirical strategy, and Section 3 describes the data. Results are discussed in Section 4. Section 5 concludes.

2. EMPIRICAL STRATEGY

In order to separate the impact of culture from that of markets and institutions on fertility decisions of adolescent women, we use information on adolescent women who were born and live in the US and report a country of origin or ethnicity. These women live under the same markets and institutions in the US, so that, if only institutions and markets are relevant to their fertility decisions, home country live birth rates of women under 20 should have no impact on the probability of being a teen mother. However, if home country live birth rates can explain the fertility propensities of young women, cross-country differences in fertility can be considered to document the effect of culture. To test this issue, we estimate the following equation:

$$F_{ijk} = \beta_1 LBR_j + X_{ijk}\beta_2 + \delta_k + \gamma_r + \varepsilon_{ijk} \quad (1)$$

where F_{ijk} is a dummy variable that takes value 1 when a woman *i* of cultural origin *j* who lives in region *k* is a teen mother.[2] In the baseline regression, our measure of culture, LBR_j, is the live birth rate of women under 20 in country of origin *j*, measured in the year when woman *i* is 19 years old (see Appendix B for a detailed definition).[3] The vector X_{ijk} includes individual characteristics, such as education (Manlove 1998; Billari and Philipov 2004) and whether they live in a rural area (Berry et al. 2000; Lee 1997), which may have an impact on fertility decisions for reasons independent of culture. Since laws affecting fertility decisions (abortion laws, the access to the pill, welfare reforms, or family planning policies, among others) vary by place of residence (Stevenson and Wolfers 2007; Bailey et al. 2011), the absence of controls for the place of residence may bias our results. However, information on the geographical location of

[2] Note that we use a linear probability model for simplicity, as in previous works on the study of the effect of culture. Results are similar when using probit or logit models, see Appendix A.
[3] We revisit this definition of culture below.

women is quite limited, in this survey, for non-American researchers.[4] For this reason, and recognizing that it is not the best option, we have only been able to control for the region of residence.[5] Region fixed effects, denoted by δ_k , are added to the analysis, to mitigate the problem that may exist with place of residence.[6] We have also introduced year fixed effects in our main estimation, represented in equation (1) by γ_r, to pick up unobserved characteristics that can bias our points estimated since the women in our sample are 19 years old in a range of years, from 1979 to 1984. Finally, in order to consider any within-ethnicity correlation in the error terms, standard errors are clustered at the country of origin level.

Our variable of interest is LBR_j. Higher live birth rates are assumed to correspond to cultural attitudes more accepting of teen motherhood. If culture plays a role here, then young women originating from countries with a more accepting culture regarding teen motherhood should have, everything being equal, a higher probability of having a child at a young age than women from countries with a less accepting attitude. Then, we would expect β_1 to be positive.

Instead of controlling directly for the country of origin live birth rates, an alternative strategy would be to include dummy variables for these countries. The benefit of this approach would be that it does not require a linear relationship between the cultural proxy and fertility. However, this technique does not allow for a clear identification of

[4] Non-American researchers do not have access to information on the place of residence. As can be read in the web page of the Bureau of Labor Statistics: "To protect respondent confidentiality, the NLS public-use files do not include geographic variables such as state, county, and metropolitan area" http://www.bls.gov/nls/nlsfaqs.htm#anch25; "The Bureau of Labor Statistics (BLS) only grants access to geocode files for researchers in the United States who agree in writing to adhere to the BLS confidentiality policy and whose projects further the mission of BLS and the NLS program to conduct sound, legitimate research in the social sciences. *Applications from abroad cannot be accepted*." http://www.bls.gov/nls/nlsfaq2.htm#anch32.

[5] The US is divided into four regions, North East, North Central, South, and West. North East is the omitted variable in the analysis.

[6] As can be seen in the literature, the effect of culture on socio-economic outcomes does not disappear after adding controls for the place of residence (introducing state fixed effects or even MSAs fixed effects), although it is somewhat reduced(see, for example, Furtado et al. 2013).

how culture matters. Evidence suggests that the two approaches lead to similar conclusions. Young women originating from countries with a more accepting attitude towards teen motherhood tend to be more likely teen mothers.

3. DATA

In order to implement this analysis, we use data from the US National Longitudinal Survey of Youth (NLSY79). This survey covers 12,686 young men and women who were first interviewed in 1979, when all were between 14 and 22 years old. They were interviewed annually until 1994, and biennially thereafter, providing a wide range of information on Americans born in the 1950s and 1960s and living in the US in 1979. The survey includes questions on environmental characteristics, training investments, schooling, family income, labor market experience, health conditions, household composition, and marital and fertility histories.

Our sample consists of adolescent women born in the US who report an ethnicity or national origin. As the preferences and attitudes of these young women are likely similar to those of their parents, ancestors and ethnic communities, we argue that differences in live birth rates by national origin can be considered as supporting evidence of the importance of culture. To identify ancestry or national origin we use information on the first reported ancestry. We incorporate second-and-higher generation immigrants in our analysis. Prior literature on culture mainly uses information on second-generation immigrants, to avoid language barriers (Fernández 2007; Fernández and Fogli 2006; Fernández and Fogli 2009; Giuliano 2007). In our case, we cannot restrict our sample to second-generation immigrants, due to data availability in the NLSY79. Although language problems are avoided, the effect of the ancestor country culture can be diminished as generations go by. Thus, our estimated impact of culture on the fertility decisions of adolescent women should be seen as a lower bound.

In our main analysis, we use as cultural proxy the Live Birth Rate (LBR) of women under 20 in the country of origin, measured in the year when they are 19 years old. The LBR data, obtained from the UN Demographic Yearbooks (several issues), is calculated as the number of live births per hundred women under 20 (see Appendix B for a detailed description of this variable). The selection of this birth rate as the cultural proxy reflects the notion that adolescent women's behavior is better determined by the behavior of their counterparts in their country of origin. However, it is possible to argue that teen women's pattern of behavior is best characterized by the preferences of their parents. Thus, we should utilize as cultural proxy the LBR of their country of origin in the year of their birth. Alternatively, it is possible to argue that the attitudes of adolescent women when they take fertility decisions are better characterized by the behavior of their counterparts at that moment (we revisit this issue below.) It is worth noting that we do not expect significant differences in our results, since culture changes slowly (Fernández 2007; Furtado et al. 2013).

Our final sample contains 1,885 observations of adolescent women, with 10 different ancestries.[7] Table 1 presents summary statistics of the relevant variables by country of origin, ordered from the highest to the lowest average live birth rate of women under 20, for the period 1979-1984, the period when women are 19 years old in the sample. Column (1) displays large LBR differences across countries: from 8.78 live births per hundred women under 20 in Cuba to 1.62 in France. The other columns describe our main sample. Overall, 12.4% of women are teen mothers, but Mexicans and Portuguese are significantly more likely to be teen mothers than the average. About 48% of women have graduated from high school, although educational levels vary

[7] As in prior literature on culture, in order to make *meaningful comparisons* across averages of adolescent women by country of origin, we exclude those women from countries of origin with less than 10 observations (China, Philippines, Greece, Japan, Korea and Russia). Although our results are not expected to change, since we run the analysis at the individual level, we have repeated the analysis including these women and our results do not vary.

substantially across countries of origin, with Cuba, Poland and Germany having the highest proportion of women enrolled in a college degree and Portugal having the lowest. Most women do not live in a rural area although, as previously, there are variations across countries of origin, with those from the UK and Germany having the highest proportion of women living in a rural area (more than 20%). In most cases, women originating from countries with a high LBR are teen mothers in higher proportion. However, this can also be explained, for example, by differences in educational attainment. Thus, a more detailed analysis is needed.

4. RESULTS

4.1. Baseline Regression

In Table 2, we show the estimates for the baseline specification. In this case, the variable used as a cultural proxy is the home country live birth rate of women under 20, measured in the year in which each woman is aged 19. In the first column, it can be seen that a rise in the home country live birth rate of an adolescent woman is related to a greater probability that this woman is a teen mother. In this column, we add controls for individual-level socio-economic characteristics measured when the women are aged 19. These variables may have an effect on the probability of being a teen mother for causes independent of culture. With respect to the education level, since women who do not drop out of school are less likely to have a child when they are adolescent (Manlove 1998), our finding that more educated women are less likely to be teen mothers than those with low levels of education is not striking.[8]

[8] The variable omitted is *Not enrolled in high school*, which includes women who completed less than the 12th grade.

As mentioned above, the place of residence of women is a potential factor affecting fertility decisions. For that reason, we have also added controls for geographical location. Again, note that we only have information on whether our women live in a rural area, and on the region of residence since, currently, non-American researchers are not allowed to obtain more information on this issue. Living in a rural area is not statistically significant, although the coefficient is negative.

It is comforting that, regardless of the controls included in our regressions, the cultural proxy has a significant and positive impact on the probability of being a teen mother. Focusing on Column (2), which includes year and region fixed effects, an increase of 1 point in the cultural proxy is associated with an increase of 2.3% in the probability of being a teen mother. Put another way, an average woman from Cuba, the country with the highest LBR (8.8 live births per hundred women under 20 on average from 1979 to 1984) is 16.5 percentage points more likely to have a child when she is under 20 than an average woman from France, the country with the lowest LBR (1.6 on average).

4.1.1. Robustness Checks

To check whether our findings are sensitive to the definition of the cultural proxy, and/or the sample selection, we run several simple robustness checks. We show these results in Tables 3 to 5.

Existing literature on the effect of culture on socio-economic variables typically employs as a cultural proxy the information on the variable of interest for several years. As Fernández and Fogli (2009) claim, it is not clear, theoretically, which year to utilize. Since most of the prior literature uses information on immigrants, they suggest that the culture of immigrants is best measured at the time of migration. Alternatively, as

Furtado et al. (2013) explain, if immigrants remain in contact with their family and/or friends in their home countries during several years after migrating, then their attitudes can be better characterized by the behavior of their counterparts in the country of ancestry, at the time of the survey. For those studies using second-and-higher generation immigrant samples, it can also be argued that the preferences of these individuals are better measured by their parents' counterparts in their country of origin when they were born, or some years after their arrival, assuming that parents transmit their preferences when the child is young. To tackle this issue rather than solving it theoretically, as in Furtado et al. (2013), we use alternative definitions of our variable of interest, the cultural proxy. Specifically, we use the home country live birth rate of women under 20 over seven years (see Table 3). In Column (1), we use the value of this indicator in the year 1950, in Column (2) the indicator refers to 1960, and so on, up to Column (7), in which this variable refers to 2005. As expected, since changes in culture occur slowly, irrespective of the year in which our cultural proxy is measured, results are quite similar. Coefficients of interest are always positive and significant at the 5% and 1% level, as in the baseline regression, although the effect decreases somewhat. Additionally, we test this issue by measuring the cultural proxy when women were born. In this case, the range of years of the cultural proxy is 1960 to 1965 and our results are shown in Table 4. As before, results do not change substantially.

Another potential problem with our estimates is that adolescent women in the US may not be a representative sample of their counterparts in their ancestor's home countries. As explained in Furtado et al. (2013), for example, those living in home countries may show patterns of adventure-seeking behavior, risk aversion, or political preferences that are quite different from those living in the US. In addition, following Furtado et al. (2013), individuals tend to migrate from specific areas; for example a

specific region with economic problems, which possibly makes adolescent women in the US very similar to each other but, probably, quite different from the average women in their ancestor's home countries. This can be a problem for our estimates. However, as explained in Furtado et al. (2013), if, for instance, all adolescent women living in the US and reporting an ancestry were less "risk adverse" than the women in their country of origin, irrespective of their ancestry, then our work would not be affected by any bias since it is based on cross-country variation.

It could be the case that those women originating from Cuba and living in the US are different from those living in the home country, mainly because their parents had to migrate to the US for political reasons in the 1950s and 1960s, during the Cuban revolution and after the establishment of the Communist regime. Thus, it could be argued that there are differences in the preferences and attitudes of ethnic-Cubans born in the US and their counterparts living in Cuba. If these differences matter, then we should observe changes in our estimates after excluding women originating from Cuba. We check this in Table 5. In order to easily compare our results, we have included the baseline regression in Column (1), which includes Cuban women. Column (2) displays the estimated coefficients after excluding young Cuban women, and we observe that the impact of the cultural proxy increases slightly in magnitude. The interpretation of this result is difficult, since the impact of eliminating Cubans does not seem particularly significant - but this result can also be conditional on the scarcity of observations from Cuba, just 13. All in all, adding or deleting these observations does not substantially change our results.

In Table 5, we show other simple robustness checks, following Furtado et al. (2013), in order to test whether our findings are sensitive to sample selection. Column (3) excludes information for women originating from the country with the most

observations, the UK, and Column (4) excludes women from Cuba and the UK, the countries with the fewest and the highest number of observations, respectively. Results remain unchanged. Similarly, Column (5) excludes the country with the lowest average live birth rate, France (the highest LBR is for Cuba, and Column (2) already reports these estimates). Finally, Column (6) does not incorporate observations for Cubans and French. Again, results do not vary. The positive impact of culture on fertility of teen women appears to be quite consistent.

4.2. Other Family and Individual Attributes

Heretofore, we have included in the baseline regression many of the factors determining fertility decisions among adolescent women. The NLSY79 also contains information on other potentially relevant variables, not included by us in the baseline model, mainly because of endogeneity concerns. [9] One of these determinants is the marital status of women. Married women have children in higher proportion than non-married women. The ratio of births to married mothers per 100 total live births for women aged 18-19 years old pregnant was almost 60% in 1979 (data come from the US National Vital Statistics Report). However, child conceived as a result of premarital intercourse also increases the probability of marriage, the popularly known as shotgun marriages. The marriage and cohabitation expectations of young women appear to be a relevant issue when having a child at a young age (Wolfe et al. 2007). (Wolfe et al. 2007; Manning 1993; Parnell et al. 1994). Then, the inclusion of these endogenous factors would lead to bias our estimates. Being aware of this, we have repeated the analysis, adding controls for whether adolescent women have never been married. Table 6 presents our findings. As expected, never-married adolescent women are less likely to be teen mothers. Oddly

[9] It is possible to argue that the level of education of adolescent women is an endogenous factor which can bias our estimates. As with the rest of potential endogenous variables, for consistency, we have also repeated the analysis without controls for educational level and results do not vary although we do not show the results in the paper.

enough, our estimate of the impact of culture on the probability of being a teen mother does not change.

Similarly, the income variables are not included in the baseline model because of potential endogeneity concerns. Teen mothers live in poor families in higher proportion than non-teen mothers (Hobcraft and Kiernan 2001). If teen mothers are those living in poor families and having low income expectations, controlling for income variables would lead to bias our results. Mindful of this, we have repeated the analysis by adding a dummy variable that takes the value of 1 if a woman reports that her family is in poverty. Estimated coefficients are shown in Table 7. As before, our coefficient of interest does not vary substantially in Column (2), it remains positive and significant, although its impact decreases slightly.

Religious affiliation can also be an important determinant of fertility decisions among teen women (Cooksey 1990). As previously, the introduction of these variables can be problematic if they are highly correlated with unobserved determinants of teen fertility. For example, the use of contraceptive methods, which is unobserved, is related with the probability of getting pregnant but it is also correlated with the religious affiliation of women since some religions reject the use of these methods. Then, adding controls for religion affiliation may generate biased estimates. Being aware of this problem, we have run our main regression after adding controls for religion variables in Columns (3) and (4) of Table 7. Note that we have separately considered the religious affiliation when the subjects are 19, Column (4), and the religious affiliation in which they were raised, Column (3). Results show that only those women who were raised in the Roman Catholic religion are less likely to be teen mothers. With respect to our variable of interest, once again, the impact of culture on the probability of being a teen mother remains unchanged.

The NLSY79 also reports the family size of the respondents. Since this variable can also generate endogeneity concerns, we have not included it in the main analysis (Cooksey 1990).. Just to check whether our results are robust to the inclusion of the family size, we have repeated the analysis including the family size of adolescent women. We observe that our results are quite similar. Finally, we have added all controls in Column (6) of Table 7. It is again comforting that our results do not change, even while we are conscious of the endogeneity problems that the inclusion of these variables can generate.

In Table 8, we have included other personal characteristics that are potential determinants of fertility decisions. As before, they are not added to the baseline analysis, mainly because they can bias our estimates. Since teen mothers are more likely to grow up under mono-parental families, or without parents at all (Painter and Levine 2000), if an unobserved process jointly determines family structure and the fertility behavior of adolescent women, adding controls for family structure may lead to biased results. We have checked whether our results vary after adding variables picking up the effect of family structure. Columns (2), (3) and (4) include variables controlling for whether respondent's father, mother, or none of them are still living, respectively. As can be seen, our results remain unchanged.

Risk attitudes can also be a determinant of fertility behavior of adolescent women (Cooper 2002; Mensch and Kandel 1992). The omission of controls for this is due to the potential correlation of these risk attitude characteristics and the unobserved determinants of fertility decisions. Having knowledge of the endogeneity concerns, we have included in the analysis controls for risk attitudes to check whether our results do not vary. Column (5) controls for whether the respondent started drinking at least once a week when she was 16 or younger; Column (6) controls for whether the respondent ever

had an abortion; Column (7) includes a variable controlling for whether the respondent had used narcotics when she was 18 or younger, and Column (8) controls for whether the respondent had her first sexual intercourse when she was 16 or younger. As can be seen, our findings do not significantly change after adding these potential determinants of fertility decisions. Note that the interpretation of some of these results is difficult, due to the scarcity of observations and the potential difference between the response young women give to this kind of question in a survey, and what they actually do.

Finally, Columns (9), (10) and (11) include controls for female attitudes that, again, can be related with unobserved determinants of fertility decisions. Although the inclusion of these variables generates doubts because of the endogeneity concerns, we have run the analysis to check the consistency of our findings. In Column (9), women are considered traditional if they strongly disagree with the affirmation "Men should share the work around the house with women, such as doing dishes, cleaning and so forth". In Column (10), women are considered traditional if they strongly agree with the affirmation "It is much better for everyone concerned if the man is the achiever outside the home and the woman takes care of the home and family". In Column (11), women are considered traditional if they strongly agree with the affirmation "Women are much happier if they stay at home and take care of their children". Again, after adding these variables, our results do not vary, nor do they change when we introduce all these controls in the same specification. We conclude that culture appears to play an important role in the fertility decisions of teen women.

4.3. Unobserved Heterogeneity and Differences across Ancestries

In this analysis, we consider more deeply the possibility that our estimates could be picking up differences in other country of origin characteristics, in addition to or instead of fertility culture. For example, it is possible to argue that those women originating

from countries where women marry young also have children when they are younger. Thus, the differences in fertility of young women across countries will be due to age-at-first-marriage preferences, rather than fertility culture. Similarly, if young women from poor countries of origin have a child (Becker 1960; Singh 1998), then the differences in fertility of young women could be due to poverty conditions (considering that this situation is translated to the US) rather than to fertility culture.

Although this problem should be mitigated by adding controls for marital status and poverty status at the individual level (see above), we have tested this further by adding home country characteristics in Table 9. Note that Column (1) presents our baseline results. We first add per capita GDP at the country of origin level (data from the United Nations Statistics Division, see Appendix B) to our main model in Column (2). Surprisingly, we obtain a positive relationship between per capita GDP and the probability of teen motherhood. This can be explained by differences in migration patterns. For example, it can be argued that rich people living in poor countries tend to migrate to more developed countries, such as the US; then, the fertility behavior of these adolescent women can be different from their counterparts in their ancestor home country. In this case, our cultural proxy is still positively correlated with the probability of being a teen mother, and the magnitude of the effect has slightly increased. We then incorporate controls for the average age at first marriage at the country level (see, for a description, Appendix B). Results are reported in Column (3) of Table 9. As expected, an increase in the age at first marriage decreases the probability of being a teen mother. In this case, the coefficient picking up the cultural effect decreases in magnitude.

Finally, we introduce controls for the minimum legal age of consent (several sources, see Appendix B) in each country, in Column (4). Again, as expected, an increase in the minimum legal age of consent decreases the probability of being a teen

mother. The effect of culture on the probability of being a teen mother remains positive and significant. We also add all controls to the same regression in Column (5). In this case, coefficients on the control variables turn out to be non-significant. Our variable of interest is still positive and significant. It appears that we are not misguidedly interpreting our results as evidence of culture.

4.4 Placebo tests

We present additional evidence that we are not capturing unobserved characteristics, such as risk attitudes or norms that can be correlated with our cultural proxy. If, for example, these unobserved variables were the main factor in divergence in the fertility behavior of adolescent women, we would expect it to affect the fertility behavior of all women. Similarly, unobserved characteristics of the parents of the young women that can also be correlated with our cultural proxy, and that may impact the fertility behavior of adolescent women, can certainly have an effect on the family income.

To tackle this issue, we follow Fernández and Fogli (2009) and Furtado et al. (2013) by running placebo tests. We first consider as dependent variable an indicator variable that takes the value of 1 if the women forming the sample have been a mother in any period of their life. Results are reported in Column (2) of Table 10. Column (1) contains the estimates of our baseline regression. We also repeat the analysis, but now including as dependent variable the total net family income measured in logarithm in Column (3). As can be seen, in both cases, we obtain no statistically significant coefficient of the cultural proxy, implying that these unobserved factors are not likely to bias our main point estimates.

4.5 Fertility decisions

Although in the previous subsection we have included as controls a range of characteristics of women when they are 19 years old, it could be argued that what is

relevant in determining the effect of culture are the characteristics of these women when they decide, or not, to have a child. One of these potential factors may be the education level of adolescent women at the time of the decision. It is even possible, as mentioned above, to hypothesize that the social norms and preferences of adolescent women are better measured when they decide, or not, to have a child, thus the cultural proxy should be measured at the time of the decision.

To further analyze this issue, we incorporate in our analysis the home country live birth rate, measured in the year of the birth, if they are teen mothers, and when they are 18 or 19 years old, if they are not teen mothers. In the case of teen mothers, we choose the year of birth as a proxy of the characteristics of women when they decide to have a child. We consider this a good proxy, since the decision to have a child, or to abort, is normally taken in the period between becoming pregnant (information on when these women become pregnant is not available), and the legal limit of abortion, then close to the date in which this young women have the child. For non-teen mothers, it is more complicated, although since almost 70% of women have their children when they are 18 or 19 years old, with the greater percentage being when they are 19 (40%), it is possible to argue that non-teen mothers took the decision not to have a child when they were 18 and 19 years old.[10]

We also introduce in our analysis controls for the level of education of women when they decide, or not, to have a child. As before, for teen mothers, we would not expect important variations in these dummies during the short period between taking the decision and having the child. Results are shown in Table 11. As can be seen, our findings are maintained even after using information of the moment in which women

[10] Note that problems of availability of data make quite complicated a consistent comparison at the country level with a sample of women under 18.

take the decision. In sum, the fertility culture of adolescent women appears to be a relevant factor in determining fertility decisions.

5. CONCLUSIONS

This paper examines the impact of culture on teen motherhood. To pick up its effect, we exploit the variation in fertility rates of adolescent women by country of origin of their ancestors. The differences in fertility rates of adolescent women by national origin can be interpreted as supporting evidence of the relevance of fertility culture. This epidemiological approach allows us to strictly separate the impacts of markets and institutions from the effects of culture in ascertaining fertility decisions of teen women. We find that home country live birth rates, our main cultural proxy, have economically and statistically significant effects on the probability of being a teen mother.

Our findings are robust to alternative specifications, to different samples, and to individual characteristics, measured when women take the decision, or not, to have a child. In addition, we check whether unobserved heterogeneity across ethnic groups is driving our results, by adding to the main analysis controls for home country characteristics, such as the average age at first marriage, per capita GDP, and the minimum legal age of consent. In all specifications, the estimated coefficient on home country live birth rates varies very little. Placebo tests also suggest that we are not erroneously interpreting the impact of our cultural proxy.

Our results suggest that differences in fertility rates of teen women by ethnicity can explain, at least in part, the fertility behavior of adolescent women who have spent their lifes in the US. This can be understood as supporting evidence that cultural differences are, at least, a partial explanation for the variations in fertility rates of adolescent women across countries.

This finding can explain the differences in the effects of traditional or conventional policies, such as the diffusion of contraception information, and the improvement of adolescent sex education. Policy makers should take cultural differences into consideration to act more efficiently in decreasing teen motherhood rates in the US. The tools used for this should be focused on the specific characteristics of each segment of teenagers by ethnicity - for example, by providing family planning specialists of appropriate racial/ethnic background, or by hiring social workers who can more fully understand the specific circumstances and culture of teen women.

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Table 1.- Summary Statistics by Country of Origin

Country of Origin	Mean Home Country Live Birth Rate of Women Under 20	Proportion Of Teen Mothers	Proportion Enrolled High School	Proportion High School Graduated	Proportion Enrolled in College	Proportion Living in Rural Area	GDP per Capita	Mean Female Age at First Marriage	Number of Observations
Cuba	8.785	0.062	0.058	0.383	0.483	0.000	2.1	19.8	13
Mexico	7.873	0.349	0.063	0.376	0.324	0.095	2.9	21.6	52
Portugal	3.993	0.320	0.313	0.190	0.090	0.000	3.1	23.4	19
Poland	3.404	0.098	0.000	0.369	0.489	0.039	1.8	22.7	29
United Kingdom	2.890	0.140	0.021	0.466	0.382	0.251	8.5	23.0	800
Spain	2.375	0.133	0.000	0.572	0.323	0.078	5.1	23.4	18
Italy	2.178	0.074	0.000	0.483	0.357	0.171	7.3	23.8	67
Germany	2.148	0.114	0.009	0.499	0.409	0.219	10.2	22.9	530
Ireland	2.141	0.090	0.000	0.507	0.400	0.175	5.9	24.6	157
France	1.625	0.109	0.026	0.532	0.314	0.172	10.8	23.0	200
Average	2.508	0.124	0.016	0.484	0.384	0.217	8.8	23.1	
Std. Dev.	0.785	0.329	0.127	0.500	0.486	0.412	1.9	0.5	

Notes: Countries of origin are ordered by home country live birth rate, defined as the number of live births per hundred women under 20. This variable was constructed using information from the UN Demographic Yearbook. The other descriptive statistics in the table were constructed using our main sample, the National Longitudinal Surveys (NLSY79), except GDP per Capita –data obtained from the United Nations Statistics Division (2010) "Per Capita GDP at Current Prices in US$"- and the Average Female Age at First Marriage –data obtained from the Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat and World Marriage Data 2008 (United Nations, Department of Economic and Social Affairs, Population Division)-. The variable Home Country Live Birth of Women Under 20 is a mean of the period 1979-1984 when our young women were aged 19. In the same vein, the variable GDP per Capita is the mean GDP for the period 1979-1984. The sample consists of 1,885 women born in the US and aged 19 who report an ethnic origin.

Table 2.- Teen Fertility Culture and the Probability of Being a Teen Mother

(Dependent Variable: Teen Mother)

	(1)	(2)
Home Country Live Birth Rate	0.024***	0.023***
	(0.006)	(0.006)
Enrolled high school	-0.335***	-0.335***
	(0.030)	(0.031)
High school graduated	-0.247***	-0.243***
	(0.020)	(0.020)
Enrolled in college	-0.381***	-0.378***
	(0.019)	(0.020)
Rural	-0.012	-0.018
	(0.013)	(0.011)
Constant	0.367***	0.334***
	(0.022)	(0.023)
Year FE	YES	YES
Region FE	NO	YES
Observations	1885	1885
R-squared	0.148	0.150

Notes: Home country live birth rate is defined as the number of live births per hundred women under 20. Home country live birth rate is measured in the year in which women were 19 years old. The sample consists of women aged 19 and born in the US. For both women who are teen mothers (these who become mothers when they are 19 years old or less) and those who are not teen mothers, we take their personal information in the year in which they are 19 years old. We estimate linear probability models where the dependent variable is an indicator variable equal to 1 if the woman is a teen mother, and 0 otherwise. Column (1) includes controls for the level of education (Enrolled high school, High school graduated and Enrolled in college), whether the woman's current residence is rural, and year fixed effects. Column (2) adds region of current residence fixed effects. Robust standard errors are in parenthesis. Observations are weighted using survey weights that adjust both for the complex survey design and for using data from multiple years. *** Significant at the 1% level, ** Significant at the 5% level, * Significant at the 10% level.

Table 3.- Teen Fertility Culture and the Probability of Being a Teen Mother Using the Cultural Proxy in Different Years

(Dependent variable: Teen Mother)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Home Country Live Birth Rate 1950	0.013**						
	(0.005)						
Home Country Live Birth Rate 1960		0.015**					
		(0.005)					
Home Country Live Birth Rate 1970			0.013**				
			(0.004)				
Home Country Live Birth Rate 1980				0.028***			
				(0.008)			
Home Country Live Birth Rate 1990					0.016***		
					(0.004)		
Home Country Live Birth Rate 2000						0.016**	
						(0.005)	
Home Country Live Birth Rate 2005							0.017***
							(0.005)
Enrolled high school	-0.332***	-0.333***	-0.331***	-0.335***	-0.334***	-0.333***	-0.334***
	(0.030)	(0.030)	(0.029)	(0.032)	(0.030)	(0.030)	(0.030)
High school graduated	-0.244***	-0.244***	-0.245***	-0.243***	-0.244***	-0.244***	-0.244***
	(0.020)	(0.020)	(0.020)	(0.020)	(0.020)	(0.020)	(0.020)
Enrolled in college	-0.379***	-0.379***	-0.380***	-0.378***	-0.378***	-0.378***	-0.378***
	(0.021)	(0.021)	(0.020)	(0.020)	(0.020)	(0.020)	(0.020)
Rural	-0.018	-0.019	-0.020*	-0.019	-0.019	-0.019	-0.019
	(0.011)	(0.010)	(0.010)	(0.011)	(0.011)	(0.011)	(0.011)
Constant	0.359***	0.345***	0.339***	0.315***	0.353***	0.358***	0.359***
	(0.028)	(0.027)	(0.024)	(0.025)	(0.021)	(0.022)	(0.023)
Year FE	YES	YES	YES	YES	YES	YES	YES
Region FE	YES	YES	YES	YES	YES	YES	YES
Observations	1885	1885	1885	1885	1885	1885	1885
R-squared	0.149	0.150	0.149	0.150	0.150	0.150	0.150

Notes: Home country live birth rate is defined as the number of live births per hundred women under 20. We use information on the Live Birth Rates of country of origin at different years. The sample consists of women aged 19 and born in the US. For both women who are teen mothers (these who become mothers when they are 19 years old or less) and those who are not teen mothers we take their personal information in the year in which they are 19 years old. We estimate linear probability models where the dependent variable is an indicator variable equal to 1 if the woman is a teen mother, and 0 otherwise. All columns include controls for level of education (Enrolled high school, High school graduated and Enrolled in college), whether the woman's current residence is rural, year fixed effects and region of current residence fixed effects. Robust standard errors are in parenthesis. As our research spans multiple survey years, observations are weighted using survey weights that adjust both for the complex survey design and for using data from multiple years. *** Significant at the 1% level, ** Significant at the 5% level, * Significant at the 10% level.

Table 4.- Teen Fertility Culture and the Probability of Being a Teen Mother Using the Cultural Proxy in the Year in Which Women Were Born

(Dependent Variable: Teen Mother)

	(1)	(2)
Home Country Live Birth Rate	0.015**	0.014**
	(0.005)	(0.005)
Enrolled high school	-0.335***	-0.333***
	(0.028)	(0.029)
High school graduated	-0.249***	-0.245***
	(0.020)	(0.020)
Enrolled in college	-0.384***	-0.380***
	(0.019)	(0.020)
Rural	-0.013	-0.019*
	(0.012)	(0.010)
Constant	0.367***	0.338***
	(0.025)	(0.026)
Year FE	YES	YES
Region FE	NO	YES
Observations	1885	1885
R-squared	0.148	0.150

Notes: Home country live birth rate is defined as the number of live births per hundred women under 20. We use data related to the Home Country Live Birth Rates for all women in the year in which they were born. The sample consists of women aged 19 and born in the US. For both women who are teen mothers (these who become mothers when they are 19 years old or less) and those who are not teen mothers we take their personal information in the year in which they are 19 years old. We estimate linear probability models where the dependent variable is an indicator variable equal to 1 if the woman is a teen mother, and 0 otherwise. Column (1) includes controls for the level of education (Enrolled high school, High school graduated and Enrolled in college), whether the woman's current residence is rural and year fixed effects. Column (2) adds region of current residence fixed effects. Robust standard errors are in parenthesis. Observations are weighted using survey weights that adjust both for the complex survey design and for using data from multiple years. *** Significant at the 1% level, ** Significant at the 5% level, * Significant at the 10% level.

Table 5.- Teen Fertility Culture and the Probability of Being a Teen Mother Using Different Samples

(Dependent Variable: Teen Mother)

	(1)	(2)	(3)	(4)	(5)	(6)
Home Country Live Birth Rate	0.023***	0.028***	0.022**	0.028***	0.023**	0.029***
	(0.006)	(0.004)	(0.007)	(0.003)	(0.008)	(0.005)
Enrolled high school	-0.335***	-0.335***	-0.379***	-0.381***	-0.342***	-0.343***
	(0.031)	(0.032)	(0.047)	(0.048)	(0.037)	(0.038)
High school graduated	-0.243***	-0.243***	-0.250***	-0.250***	-0.259***	-0.259***
	(0.020)	(0.020)	(0.039)	(0.039)	(0.019)	(0.019)
Enrolled in college	-0.378***	-0.378***	-0.359***	-0.359***	-0.395***	-0.395***
	(0.020)	(0.020)	(0.034)	(0.034)	(0.008)	(0.008)
Rural	-0.018	-0.019	-0.019	-0.020	-0.014	-0.015
	(0.011)	(0.011)	(0.021)	(0.021)	(0.013)	(0.012)
Constant	0.334***	0.262***	0.262***	0.249***	0.353***	0.340***
	(0.023)	(0.023)	(0.045)	(0.043)	(0.018)	(0.012)
Year FE	YES	YES	YES	YES	YES	YES
Region FE	YES	YES	YES	YES	YES	YES
Observations	1885	1872	1085	1072	1685	1672
R-squared	0.150	0.151	0.152	0.153	0.156	0.158

Notes: Home country live birth rate is defined as the number of live births per hundred women under 20. Home country live birth rate is measured in the year in which women were 19 years old. The sample consists of women aged 19 and born in US. For both women who are teen mothers (these who become mothers when they are 19 years old or less) and those who are not teen mothers we take their personal information in the year in which they are 19 years old. We estimate linear probability models where the dependent variable is an indicator variable equal to 1 if the woman is a teen mother, and 0 otherwise. Column (1) includes our baseline regression (Column (2) of Table 2). Column (2) includes the same controls, but does not include information on the country with fewer observations (Cuba). Column (3) includes the same controls as Column (1) but does not include information on the country with more observations (United Kingdom). Column (4) includes the same controls as Column (1) but does not include information on the country with more observations (United Kingdom) and with fewer observations (Cuba). Column (5) includes the same controls as Column (1) but does not include information on the country with the lower Live Birth Rate (France). Column (6) includes the same controls as Column (1) but does not include information on the country with the higher Live Birth Rate (Cuba) and on the country with the lower Live Birth Rate (France). Robust standard errors are in parenthesis. Observations are weighted using survey weights that adjust both for the complex survey design and for using data from multiple years. *** Significant at the 1% level, ** Significant at the 5% level, * Significant at the 10% level.

Table 6.- Teen Fertility Culture and the Probability of Being a Teen Mother Controlling for the Marital Status

(Dependent Variable: Teen Mother)

	(1)	(2)
Home Country Live Birth Rate	0.023***	0.021***
	(0.006)	(0.005)
Enrolled high school	-0.335***	-0.146***
	(0.031)	(0.024)
High school graduated	-0.243***	-0.133***
	(0.020)	(0.021)
Enrolled in college	-0.378***	-0.187***
	(0.020)	(0.029)
Rural	-0.018	-0.032*
	(0.011)	(0.014)
Never Married		-0.339***
		(0.014)
Constant	0.334***	0.512***
	(0.023)	(0.026)
Year FE	YES	YES
Region FE	YES	YES
Observations	1885	1885
R-squared	0.150	0.278

Notes: Home country live birth rate is defined as the number of live births per hundred women under 20. Home country live birth rate is measured in the year in which women were 19 years old. The sample consists of women aged 19 and born in the US. For both women who are teen mothers (these who become mothers when they are 19 years old or less) and those who are not teen mothers we take their personal information in the year in which they are 19 years old. We estimate linear probability models where the dependent variable is an indicator variable equal to 1 if the woman is a teen mother, and 0 otherwise. Column (1) includes our baseline regression (Column (2) of Table 2). Column (2) adds a control for the marital status of women. Robust standard errors are in parenthesis. Observations are weighted using survey weights that adjust both for the complex survey design and for using data from multiple years. *** Significant at the 1% level, ** Significant at the 5% level, * Significant at the 10% level.

Table 7.- Teen Fertility Culture and the Probability of Being a Teen Mother Including Family Characteristics and Religion

(Dependent Variable: Teen Mother)

	(1)	(2)	(3)	(4)	(5)	(6)
Home Country Live Birth Rate	0.023***	0.021**	0.023***	0.023**	0.023***	0.021**
	(0.006)	(0.007)	(0.007)	(0.007)	(0.006)	(0.008)
Enrolled high school	-0.335***	-0.339***	-0.336***	-0.331***	-0.334***	-0.340***
	(0.031)	(0.032)	(0.031)	(0.032)	(0.031)	(0.031)
High school graduated	-0.243***	-0.250***	-0.245***	-0.244***	-0.243***	-0.254***
	(0.020)	(0.018)	(0.020)	(0.020)	(0.020)	(0.018)
Enrolled in college	-0.378***	-0.375***	-0.380***	-0.379***	-0.377***	-0.381***
	(0.020)	(0.018)	(0.020)	(0.021)	(0.021)	(0.020)
Rural	-0.018	-0.012	-0.018	-0.021*	-0.018	-0.012
	(0.011)	(0.015)	(0.010)	(0.011)	(0.011)	(0.013)
Povstat		0.048				0.045
		(0.043)				(0.042)
Protestant			-0.010			0.009
			(0.010)			(0.056)
Roman catholic			-0.027*			0.015
			(0.014)			(0.065)
No religion			0.032			0.046
			(0.024)			(0.061)
Protestant current				-0.013		-0.021
				(0.013)		(0.066)
Roman catholic current				-0.035		-0.048
				(0.019)		(0.072)
No religion current				-0.023		-0.049
				(0.022)		(0.033)
Family size					-0.001	0.003
					(0.002)	(0.004)
Constant	0.334***	0.340***	0.351***	0.300***	0.336***	0.293***
	(0.023)	(0.026)	(0.020)	(0.028)	(0.020)	(0.030)
Year FE	YES	YES	YES	YES	YES	YES
Region FE	YES	YES	YES	YES	YES	YES
Observations	1885	1767	1881	1882	1885	1761
R-squared	0.150	0.155	0.151	0.151	0.150	0.156

Notes: Home country live birth rate is defined as the number of live births per hundred women under 20. Home country live birth rate is measured in the year in which women were 19 years old. The sample consists of women aged 19 and born in the US. For both women who are teen mothers (these who become mothers when they are 19 years old or less) and those who are not teen mothers we take their personal information in the year in which they are 19 years old. We estimate linear probability models where the dependent variable is an indicator variable equal to 1 if the woman is a teen mother, and 0 otherwise. Column (1) includes our baseline regression (Column (2) of Table 2). Column (2) adds a control for family poverty status. Column (3) includes controls for the religion within which the women were raised, distinguishing between Protestants, Roman Catholics and No religion (Other religions is the omitted variable). Column (4) controls for the current religious affiliation, again distinguishing between Protestants, Roman Catholics, Other religions and No religion. Column (5) adds a control for the family size. Finally, Column (6) includes all controls in the same regression. Robust standard errors are in parenthesis. Observations are weighted using survey weights that adjust both for the complex survey design and for using data from multiple years. *** Significant at the 1% level, ** Significant at the 5% level, * Significant at the 10% level.

Table 8.- Teen Fertility Culture and the Probability of Being a Teen Mother Including Personal Characteristics

(Dependent Variable: Teen Mother)

	(1)	(2)	(3)	(4)	(5)	(6)
Home Country Live Birth Rate	0.023***	0.028***	0.024**	0.027**	0.024***	0.023***
	(0.006)	(0.008)	(0.008)	(0.008)	(0.006)	(0.007)
Enrolled high school	-0.335***	-0.277***	-0.292***	-0.275***	-0.332***	-0.335***
	(0.031)	(0.043)	(0.038)	(0.047)	(0.031)	(0.038)
High school graduated	-0.243***	-0.193***	-0.210***	-0.195***	-0.241***	-0.240***
	(0.020)	(0.034)	(0.031)	(0.034)	(0.021)	(0.024)
Enrolled in college	-0.378***	-0.326***	-0.346***	-0.327***	-0.374***	-0.374***
	(0.020)	(0.025)	(0.028)	(0.027)	(0.021)	(0.019)
Rural	-0.018	-0.029**	-0.033**	-0.034**	-0.022	-0.021
	(0.011)	(0.012)	(0.010)	(0.011)	(0.013)	(0.015)
With Father		-0.016				
		(0.016)				
With Mother			0.006			
			(0.041)			
Orphan				0.020		
				(0.045)		
Drink					0.046**	
					(0.015)	
Abortion						0.041
						(0.030)
Constant	0.334***	0.285***	0.295***	0.273***	0.324***	0.267***
	(0.023)	(0.033)	(0.025)	(0.044)	(0.024)	(0.027)
Year FE	YES	YES	YES	YES	YES	YES
Region FE	YES	YES	YES	YES	YES	YES
Observations	1885	1263	1282	1259	1863	1796
R-squared	0.150	0.126	0.135	0.128	0.153	0.151

Notes: Home country live birth rate is defined as the number of live births per hundred women under 20. Home country live birth rate is measured in the year in which women were 19 years old. The sample consists of women aged 19 and born in the US. For both women who are teen mothers (these who become mothers when they are 19 years old or less) and those who are not teen mothers we take their personal information in the year in which they are 19 years old. Column (1) includes our baseline regression. Columns (2) and (3) include a variable for whether respondent´s father and mother are still alive, respectively. Column (4) controls for whether respondent´s father and mother are both death. Column (5) controls for whether the respondent began drinking at least once a week when she was 16 years old or before. Column (6) controls for whether women ever had an abortion. All columns include controls for the level of education (Enrolled high school, High school graduated and Enrolled in college), whether the woman's current residence is rural, year fixed effects and region of current residence fixed effects. Robust standard errors are in parenthesis. Observations are weighted using survey weights that adjust both for the complex survey design and for using data from multiple years. *** Significant at the 1% level, ** Significant at the 5% level, * Significant at the 10% level.

Table 8.- Teen Fertility Culture and the Probability of Being a Teen Mother
Including Personal Characteristics II (Continuation)
(Dependent Variable: Teen Mother)

	(1)	(7)	(8)	(9)	(10)	(11)
Home Country Live Birth Rate	0.023***	0.023***	0.016*	0.023***	0.023***	0.023***
	(0.006)	(0.007)	(0.009)	(0.006)	(0.006)	(0.006)
Enrolled high school	-0.335***	-0.342***	-0.375***	-0.333***	-0.330***	-0.335***
	(0.031)	(0.036)	(0.078)	(0.033)	(0.031)	(0.031)
High school graduated	-0.243***	-0.247***	-0.316***	-0.242***	-0.240***	-0.243***
	(0.020)	(0.023)	(0.066)	(0.020)	(0.019)	(0.020)
Enrolled in college	-0.378***	-0.383***	-0.450***	-0.376***	-0.374***	-0.378***
	(0.020)	(0.021)	(0.057)	(0.020)	(0.020)	(0.021)
Rural	-0.018	-0.024*	0.021	-0.019	-0.016	-0.018
	(0.011)	(0.013)	(0.014)	(0.011)	(0.011)	(0.011)
Drug		0.052				
		(0.046)				
Sex Under 16			0.149**			
			(0.050)			
Traditional I				-0.030		
				(0.022)		
Traditional II					0.132*	
					(0.061)	
Traditional II						0.004
						(0.027)
Constant	0.334***	0.278***	0.347***	0.272***	0.272***	0.273***
	(0.023)	(0.031)	(0.069)	(0.028)	(0.029)	(0.028)
Year FE	YES	YES	YES	YES	YES	YES
Region FE	YES	YES	YES	YES	YES	YES
Observations	1885	1826	515	1882	1882	1882
R-squared	0.150	0.155	0.244	0.151	0.154	0.150

Notes: Home country live birth rate is defined as the number of live births per hundred women under 20. Home country live birth rate is measured in the year in which women were 19 years old. The sample consists of women aged 19 and born in the US. For both women who are teen mothers (these who become mothers when they are 19 years old or less) and those who are not teen mothers we take their personal information in the year in which they are 19 years old. Column (1) includes our baseline regression. Column (7) includes a variable controlling for whether respondent had used narcotics when she was 18 years old or before. Column (8) controls for whether the respondent had her first sexual intercourse when she was 16 years old or before. Columns (9), (10) and (11) include controls for female attitudes. In Column (9) women are considered traditional if they strongly disagree with the affirmation "Men should share the work around the house with women, such as doing dishes, cleaning and so forth". In Column (10) women are considered traditional if they strongly agree with the affirmation "It is much better for everyone concerned if the man is the achiever outside the home and the woman takes care of the home and family". In Column (11) women are considered traditional if they strongly agree with the affirmation "Women are much happier if they stay at home and take care of their children". All columns include controls for the level of education (Enrolled high school, High school graduated and Enrolled in college), whether the woman's current residence is rural, year fixed effects and region of current residence fixed effects. Robust standard errors are in parenthesis. Observations are weighted using survey weights that adjust both for the complex survey design and for using data from multiple years. *** Significant at the 1% level, ** Significant at the 5% level, * Significant at the 10% level.

Table 9.- Teen Fertility Culture and the Probability of Being a Teen Mother, Cross-Country Differences

(Dependent Variable: Teen Mother)

	(1)	(2)	(3)	(4)	(5)
Home Country Live Birth Rate	0.023***	0.029***	0.020**	0.024***	0.027***
	(0.006)	(0.006)	(0.006)	(0.006)	(0.007)
Enrolled high school	-0.335***	-0.336***	-0.336***	-0.334***	-0.336***
	(0.031)	(0.031)	(0.031)	(0.031)	(0.031)
High school graduated	-0.243***	-0.244***	-0.243***	-0.243***	-0.243***
	(0.020)	(0.020)	(0.020)	(0.020)	(0.020)
Enrolled in college	-0.378***	-0.378***	-0.378***	-0.378***	-0.378***
	(0.020)	(0.020)	(0.020)	(0.020)	(0.020)
Rural	-0.018	-0.019	-0.019	-0.018	-0.019
	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)
Per capita GDP		0.005**			0.003
		(0.002)			(0.003)
Age at first marriage			-0.014**		-0.003
			(0.005)		(0.012)
Age consensual relations				-0.005*	-0.002
				(0.003)	(0.005)
Constant	0.334***	0.287***	0.656***	0.409***	0.394
	(0.023)	(0.025)	(0.130)	(0.041)	(0.246)
Year FE	YES	YES	YES	YES	YES
Region FE	YES	YES	YES	YES	YES
Observations	1885	1885	1885	1885	1885
R-squared	0.150	0.151	0.150	0.150	0.151

Notes: Home country live birth rate is defined as the number of live births per hundred women under 20. Home country live birth rate is measured in the year in which women were 19 years old. The sample consists of women aged 19 and born in the US. For both women who are teen mothers (these who become mothers when they are 19 years old or less) and those who are not teen mothers we take their personal information in the year in which they are 19 years old. We estimate linear probability models where the dependent variable is an indicator variable equal to 1 if the woman is a teen mother, and 0 otherwise. Column (1) includes our baseline regression (Column (2) of Table 2). Column (2) adds a control for the per capita GDP of the country of origin (see Appendix B for a description). Column (3) includes a control for the mean age at first marriage in each country in 1980. Column (4) introduces a control for the minimum legal age of consent. Finally, Column (5) includes all three controls in the same regression. Robust standard errors are in parenthesis. Observations are weighted using survey weights that adjust both for the complex survey design and for using data from multiple years. *** Significant at the 1% level, ** Significant at the 5% level, * Significant at the 10% level.

Table 10.- Teen Fertility Culture and the Probability of Being a Teen Mother
Placebo tests

(Dependent Variables: Teen Mother, Mother and Log Total Net Family Income)

	(1)	(2)	(3)
Home Country Live Birth Rate	0.023***	-0.010	0.009
	(0.006)	(0.018)	(0.008)
Enrolled high school	-0.335***	-0.187**	0.440***
	(0.031)	(0.073)	(0.102)
High school graduated	-0.243***	-0.091**	0.574***
	(0.020)	(0.030)	(0.078)
Enrolled in college	-0.378***	-0.174***	1.024***
	(0.020)	(0.041)	(0.096)
Rural	-0.018	0.039	-0.155***
	(0.011)	(0.037)	(0.033)
Constant	0.334***	0.830***	9.224***
	(0.023)	(0.067)	(0.150)
Year FE	YES	YES	YES
Region FE	YES	YES	YES
Observations	1885	1885	1481
R-squared	0.150	0.031	0.105

Notes: Home country live birth rate is defined as the number of live births per hundred women under 20. Home country live birth rate is measured in the year in which women were 19 years old. The sample consists of women aged 19 and born in the US. For both women who are teen mothers (these who become mothers when they are 19 years old or less) and those who are not teen mothers we take their personal information in the year in which they are 19 years old. Column (1) includes our baseline regression. Column (2) includes the variable mother as dependent variable that takes value 1 if the woman is a mother and 0 otherwise. Column (3) includes the logarithm of the Total Net Family Income as dependent variable. All columns include controls for the level of education (Enrolled high school, High school graduated and Enrolled in college), whether the woman's current residence is rural, year fixed effects and region of current residence fixed effects. Robust standard errors are in parenthesis. Observations are weighted using survey weights that adjust both for the complex survey design and for using data from multiple years. *** Significant at the 1% level, ** Significant at the 5% level, * Significant at the 10% level.

Table 11.- Teen Fertility Culture and the Probability of Being a Teen Mother Using Live Birth Rates of the Year of Birth of the First Child

(Dependent Variable: Teen Mother)

	(1)	(2)	(3)	(4)
Home Country Live Birth Rate	0.023***	0.038***	0.024**	0.026***
	(0.006)	(0.010)	(0.008)	(0.007)
Enrolled high school	-0.335***	-0.337***	-0.334***	-0.321***
	(0.031)	(0.033)	(0.031)	(0.064)
High school graduated	-0.243***	-0.240***	-0.243***	-0.247**
	(0.020)	(0.019)	(0.020)	(0.087)
Enrolled in college	-0.378***	-0.375***	-0.377***	-0.338***
	(0.020)	(0.019)	(0.020)	(0.087)
Rural	-0.018	-0.018	-0.018	-0.002
	(0.011)	(0.011)	(0.011)	(0.016)
Enrolled high school at fertility decision				-0.088
				(0.065)
High school graduated at fertility decision				-0.002
				(0.086)
Enrolled in college at fertility decision				-0.120
				(0.075)
Constant	0.334***	0.297***	0.331***	0.368***
	(0.023)	(0.026)	(0.025)	(0.018)
Year FE	YES	YES	YES	YES
Region FE	YES	YES	YES	YES
Observations	1885	1885	1885	1538
R-squared	0.150	0.155	0.150	0.227

Notes: Home country live birth rate is defined as the number of live births per hundred women under 20. First column contains our baseline regression(Column (2) of Table 2).. In Columns (2) and (3), the home country live birth rate is measured in the year of birth of the first child if the woman is a teen mother, or when a young woman is 19 or 18 if they are not teen mothers, respectively. The sample consists of women aged 19 and born in the US. We estimate linear probability models where the dependent variable is an indicator variable equal to 1 if the woman is a teen mother, and 0 otherwise. All columns include controls for the level of education (Enrolled high school, High school graduated and Enrolled in college), whether the woman's current residence is rural, year fixed effects and region of current residence fixed effects.. Robust standard errors are in parenthesis. In Column (4), the home country live birth rate is measured in the year in which women were 19 years old. In this column, we add dummies to control for the education level of women when they take the fertility decisions. For teen mothers it is the year in which they have their first child and for non-teen mothers it is assumed to be the year in which they are 18 years old. Observations are weighted using survey weights that adjust both for the complex survey design and for using data from multiple years. *** Significant at the 1% level, ** Significant at the 5% level, * Significant at the 10% level.

APPENDIX A

Table A.- Teen Fertility Culture and the Probability of Being a Teen Mother Using Logit and Probit Models

(Dependent Variable: Teen Mother)

	(1)	(2)	(3)
Home Country Live Birth Rate	0.023***	0.195***	0.107***
	(0.006)	(0.040)	(0.022)
Enrolled high school	-0.335***	-2.361***	-1.303***
	(0.031)	(0.475)	(0.245)
High school graduated	-0.243***	-1.362***	-0.791***
	(0.020)	(0.119)	(0.069)
Enrolled in college	-0.378***	-3.994***	-2.022***
	(0.020)	(0.242)	(0.109)
Rural	-0.018	-0.190*	-0.114*
	(0.011)	(0.104)	(0.063)
Constant	0.334***	-1.033***	-0.584***
	(0.023)	(0.141)	(0.094)
Year FE	YES	YES	YES
Region FE	YES	YES	YES
Observations	1885	1885	1885
R-squared	0.150		
Pseudo R-squared		0.207	0.209

Notes: Home country live birth rate is defined as the number of live births per hundred women under 20. Home country live birth rate is measured in the year in which women were 19 years old. The sample consists of women aged 19 and born in the US. For both women who are teen mothers (these who become mothers when they are 19 years old or less) and those who are not teen mothers we take their personal information in the year in which they are 19 years old. We estimate a linear probability model in Column (1) –our baseline regression-, a logit model in Column (2) and a probit model in Column (3) where the dependent variable is an indicator variable equal to 1 if the woman is a teen mother, and 0 otherwise. All columns include controls for the level of education (Enrolled high school, High school graduated and Enrolled in college), whether the woman's current residence is rural, year fixed effects and region of current residence fixed effects. Robust standard errors are in parenthesis. Observations are weighted using survey weights that adjust both for the complex survey design and for using data from multiple years. *** Significant at the 1% level, ** Significant at the 5% level, * Significant at the 10% level.

APPENDIX B: Data Sources and Definition of Variables

Variable	Definition	Source
Dependent Variable		
Teen mother	1 if woman is a teen mother (she had her first child under 20 years old). 0 otherwise	NLSY79
Mother	1 if woman is a mother. 0 otherwise	NLSY79
Log tnfi	Logarithm of the total net family income	NLSY79
Control Variables		
Enrolled high school	1 if woman reports that is enrolled in high school. 0 otherwise	NLSY79
High school graduated	1 if woman reports that is not enrolled but is high school graduated. 0 otherwise	NLSY79
Enrolled in college	1 if woman reports that is enrolled in college. 0 otherwise	NLSY79
Rural	1 if woman reports that her current residence is rural. 0 if it is urban	NLSY79
Region FE	Dummy variables for the region of residence (North East (omitted), North Central, South, and West)	NLSY79
Year FE	Dummy variables for the years: 1979, 1980, 1981, 1982, and 1983 (1984 omitted)	NLSY79
Never married	1 if woman has never been married. 0 otherwise	NLSY79
Povstat	1 if woman reports that in 1979 her family was in poverty. 0 otherwise	NLSY79
Protestant	1 if woman reports that she was raised in a protestant religion (Protestant, Baptist, Episcopalian, Lutheran, Methodist, Presbyterian). 0 otherwise	NLSY79
Roman Catholic	1 if woman reports that she was raised in the Roman Catholic religion. 0 otherwise	NLSY79
No religion	1 if woman reports that she was raised following no religion. 0 otherwise	NLSY79
Protestant current	1 if woman reports that her current	

	religious affiliation is Protestant (Protestant, Baptist, Episcopalian, Lutheran, Methodist, Presbyterian). 0 otherwise	NLSY79
Roman Catholic current	1 if woman reports that her current religious affiliation is Roman Catholic. 0 otherwise	NLSY79
No religion current	1 if woman reports that her current religious affiliation is none. 0 otherwise	NLSY79
Family size	Number of family members, ranging from 1 to 14	
With father	1 if woman´s biological father is still alive. 0 otherwise	NLSY79
With mother	1 if woman´s biological mother is still alive. 0 otherwise	NLSY79
Orphan	1 if woman´s father and mother are both dead. 0 otherwise	NLSY79
Abortion	1 if woman has ever had an abortion. 0 otherwise	NLSY79
Use drugs	1 if woman first took narcotics when she was 18 years old or younger. 0 otherwise.	NLSY79
Teen sex	1 if woman had her first sexual intercourse when she was 16 years old or younger. 0 otherwise	NLSY79
Traditional I	1 if woman strongly disagrees with the affirmation “Men should share the work around the house with women, such as doing dishes, cleaning, and so forth”. 0 otherwise	NLSY79
Traditional II	1 if woman strongly agrees with the affirmation “It is much better for everyone concerned if the man is the achiever outside the home and the woman takes care of the home and family”. 0 otherwise	NLSY79
Traditional III	1 if woman strongly agrees with the affirmation “Women are much happier if they stay at home and take care of their children”. 0 otherwise	NLSY79

Cultural Proxies

Home Country Live Birth Rates of Women Under 20	The number of live births per hundred women under 20	Data on Live Birth Rates of women under 20 were obtained from the UN Demographic Yearbooks (several issues). We use data related to the Home Country Live Birth Rates of the year in which adolescent women were 19 years old (1979-1984). In the case of Germany we calculate the data based on the information available about the Federal Republic of Germany and the Former German Democratic Republic and in the case of United Kingdom, for the years 1979-1981 we calculate the data based on the information available about England and Wales, Northern Ireland and Scotland. We have data for each country of origin and each year, with the exception of Italy 1983 (we use 1982), Mexico 1981-1984 (we use 1980 for 1981 and 1982 and we use 1985 for 1983 and 1984), Spain 1979 and 1981-1984 (we use 1978 for 1979 and 1981 for the rest of years) and Portugal 1982 (we use 1981)
Home Country Live Birth Rate 1950	The number of live births per hundred women under 20 in 1950	Data on Live Birth Rates in 1950 of women under 20 were obtained from the UN Demographic Yearbooks (several issues). In the case of Germany we calculate the data based on the information available about the Federal Republic of Germany and the Former German Democratic Republic and in the case of United Kingdom, for the year 1950 we calculate the data based on the information available about England and Wales and Scotland. We have data for each country of origin and each year, with the exception of Italy (we use 1951), Germany (1955), Ireland (1956), and Mexico (1955)
Home Country Live Birth Rate 1960	The number of live births per hundred women under 20 in 1960	Data on Live Birth Rates in 1960 of women under 20 were obtained from the UN Demographic Yearbooks (several issues). In the case of Germany we calculate the data based on the information available about the Federal Republic of Germany and the Former German Democratic Republic and in the case of United Kingdom, for the year 1960 we calculate the data based on the information available about England and Wales and Scotland. We have data for each country of origin and each year, with the exception of Ireland (1961)
Home Country Live Birth Rate 1970	The number of live births per hundred women under 20 in 1970.	Data on Live Birth Rates in 1970 of women under 20 were obtained from the UN Demographic Yearbooks (several issues). In the case of Germany we calculate the data based on the information available about the Federal Republic of Germany and the Former German Democratic Republic and in the case of United Kingdom, for the year 1970 we calculate the data based on the information available about England and Wales and Scotland. We have data for each country of origin and each year, with the exception of Italy (we use 1971)
Home Country Live Birth Rate 1980	The number of live births per hundred women under 20. in 1980	Data on Live Birth Rates in 1980 of women under 20 were obtained from the UN Demographic Yearbooks (several issues). In the case of Germany we calculate the data based on the information available about the Federal Republic of Germany and the Former German Democratic Republic and in the case of United Kingdom, for the year 1980 we calculate the data based on the information available about England, Northern Ireland and Wales and Scotland. We have data for each country of origin and each year, with the exception of Spain (we use 1981)
Home Country Live Birth Rate 1990	The number of live births per hundred women under 20 in 1990	Data on Live Birth Rates in 1980 of women under 20 were obtained from the UN Demographic Yearbooks (several issues). In the case of Germany we calculate the data based on the information available about the Federal Republic of Germany and the Former German Democratic Republic. We have data for each country of origin and each year, with the exception of Germany (we use 1989) and Portugal (1989)
Home Country Live Birth Rate 2000	The number of live births per hundred women under 20 in 2000	Data on Live Birth Rates in 2000 of women under 20 were obtained from the UN Demographic Yearbooks (several issues). We have data for each country of origin and each year, with the exception of Germany (we use 2001), Ireland (1999), Mexico (1995), Spain (2001), Poland (2001), Portugal (2001) and United Kingdom (1999).
Home Country Live Birth Rate 2005	The number of live births per hundred women under 20 in 2005	Data on Live Birth Rates in 2005 of women under 20 were obtained from the UN Demographic Yearbooks (several issues). We have data for each country of origin and each year, with the exception of Germany (2006), Mexico (1995), Poland (2006) and United Kingdom (2004)

Home Country Live Birth Rates of Women Under 20 of the Year in Which They Were Born	The number of live births per hundred women under 20	Data on Live Birth Rates of women under 20 were obtained from the UN Demographic Yearbooks (several issues). We use data related to the Home Country Live Birth Rates of the year in which women were born (1960-1965). In the case of Germany we calculate the data based on the information available about the Federal Republic of Germany and the Former German Democratic Republic and in the case of United Kingdom, for the years 1960-1965 we calculate the data based on the information available about England and Wales and Scotland. We have data for each country of origin and each year, with the exception of Ireland in 1960 and 1962-1965 (we use 1961 for 1960, 1962 and 1963 and we use 1966 for 1964 and 1965), Mexico 1961-1964 (we use 1960 for 1960 and 1962 and we use 1965 for 1963 and 1964), Spain 1961-1965 (we use 1960 for 1961-1964 and we use 1968 for 1965) and Portugal 1961, 1962 and 1965 (we use 1960 for 1961, 1963 for 1962 and 1964 for 1965)
Home Country Live Birth Rates of Women Under 20 of the Year in Which They Take the Fertility Decision	The number of live births per hundred women under 20	Data on Live Birth Rates of women under 20 were obtained from the UN Demographic Yearbooks (several issues). We use data related to the Home Country Live Birth Rates of the year in which their first child was born (1979-1984) for teen mothers and of the year in which they were 19 years old and 18 years old (1979-1984) for non-teen mothers. In the case of Germany we calculate the data based on the information available about the Federal Republic of Germany and the Former German Democratic Republic and in the case of United Kingdom, for the years 1979-1981 we calculate the data based on the information available about England and Wales, Northern Ireland and Scotland. We have data for each country of origin and each year, with the exception of Italy 1983 (we use 1982), Mexico 1981-1984 (we use 1980 for 1981 and 1982 and we use 1985 for 1983 and 1984), Spain 1979 and 1981-1984 (we use 1978 for 1979 and 1981 for the rest of years) and Portugal 1982 (we use 1981)
Country of Origin Variables		
Gross Domestic Product (GDP)	Per capita GDP in hundreds of thousands of US dollars	United Nations Statistics Division (2010). The value of this variable for teen mothers is of the year in which their first child was born and for non-teen mothers of the year in which they were 19 years old
Age at First Marriage	The average length of single life expressed in years among those women who marry before age 50 in 1980	For Germany, Spain, France, Ireland, Italy, Poland, Portugal and United Kingdom we use data from the Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat. For Cuba and Mexico we use data from World Marriage Data 2008 (United Nations, Department of Economic and Social Affairs, Population Division). In the case of Cuba we use data of the year 1981.
Age Consensual Relations	The minimum legal age for having consensual relations	Data for Mexico comes from the Federal Penal Code, last published 17/04/2012 (art. 261-263). Data for Germany comes from the German Criminal Code (art. 176). Data for Ireland comes from the Criminal Law (Sexual Offenders) Act. 2006. Data for Italy comes from the Italian Penal Code (art. 609). Data for Portugal comes from the Portuguese Penal Code. Data for Spain comes from the Spanish Civil Code (art. 181-183). Data for United Kingdom comes from the Sexual Offences Act. 2003. Data for France comes from the French Penal Code (art. 227-25). Data for Polish comes from the Criminal Code (art. 200). Data for Cuba comes from the Cuban Penal Code (art. 300).