Impact of low skilled immigrants on native teen fertility

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November 2, 2020

Abstract

In this paper, I study whether increased competition in the labor market due to immigrant inflows has encouraged native youth to avoid one type of risky behavior: teen fertility. Exploiting cross-city variation in immigrant concentration, an analysis of U.S. Census data between 1980 and 2000 suggests that low-skilled immigrant inflows are associated with a decrease in the likelihood of teenage girls becoming mothers, and responses are strongest among girls who are more likely to become low-skilled workers in the future.

1 Introduction

Recent waves of immigration to the U.S. have increased the interest in learning whether immigration harms or benefits the native-born U.S. population. Earlier studies focused on both *negative* impacts of low-skilled immigrants on the native employment rate and wage levels (Borjas, 1994; Card and Butcher, 1991) and migration decisions (Borjas, 2006), as well as *positive* effects on educational attainment (McHenry, 2015; Hunt, 2017), and the labor supply and fertility of adult women (Seah, 2018; Furtado, 2016; Cortés and Tessada, 2011). However, no attention has been paid to teenage fertility. The rate of teen fertility is much higher in the U.S. than in other countries, and particularly high in some cities.[1] Because teen fertility may harm the mothers, fathers and babies (Fletcher and Wolfe, 2009; Mathews and MacDorman, 2010; Heath, McKenry and Leigh,1995), all factors affecting it—including immigration—should be explored.

In the current study, I ask whether increased competition in the labor market due to immigrant inflows has encouraged native youth to avoid one type of risky behavior: teen fertility. Empirical analysis is necessary because the answer is theoretically ambiguous. When low-skilled

[1]According to Kearney and Levine (2012), the teen fertility rate in U.S. teens is two and a half times as in Canada, and is around four times as in Germany or Norway, and almost ten times as in Switzerland. A teenage girl in Mississippi is four times more likely to give birth than a teenage girl in New Hampshire.

immigrant inflows are greater, native youth may reduce fertility to be better prepared because they face increased pressure from immigrants, who are potential substitutes in the local labor market. However, if low-skilled immigrant inflows make teenage girls anticipate worse labor market outcomes, they may also increase teen childbearing because the opportunity cost of teen fertility is reduced.

To answer this question, I use 1980 to 2000 U.S. Census data from Integrated Public Use Microdata Series (IPUMS) and exploit the variation across metropolitan areas and through time in the relative size of the low-skilled immigrant population to estimate the effect of immigration on native teen fertility. The main identification challenge is that immigrant location decisions are not exogenous. Unobserved economic factors that attract immigrants to a city may also be correlated with fertility decisions of native-born youth. To address the potential endogeneity in location choices, I use an instrument that is commonly used in the literature (Bartel, 1989; Card, 2001; Cortes, 2008; Furtado, 2016; Hunt, 2017). Specifically, I use the historical distribution of immigrants from their original countries in 1970 to construct an instrument for the recent distribution of immigrants, based on the idea that a country-specific immigrant network is an important consideration in the location choices of newly entered immigrants (Cortes, 2008). I show that a one standard deviation increase in the share of low-skilled immigrants reduces probability of native teen fertility by 27% (relative to a baseline rate of 0.677 out of 100 teenage girls have babies per year).

Next, I investigate the mechanisms behind this impact. First, I investigate the heterogeneous responses of native teen girls with different characteristics. For native teenage girls living with both parents in the household,[2] girls with low-skilled mothers[3] tend to respond almost two times more intensively to the immigrants flows than those with high-skilled mothers. Thus, girls who are more likely to be low-skilled workers in the future are more likely to be influenced by immigrant inflows. Second, following similar logic, I ask whether native teenagers facing higher immigrant inflows are more likely to remain enrolled in school. I find that native teenage girls are more likely to be enrolled in school when facing more low-skilled immigrants in town. Moreover, girls who are more likely to be low-skilled workers are more sensitive to immigrants inflows than potential high-skilled girls. Thus, teenagers' desire to succeed in future labor markets is correlated with both education and fertility decisions, revealing the importance of considering the three goals together in policy making.

[2]The reason to focus on the group of teenage girls with both parents in the household is that census data used in this study can only link parents to teenagers if they live together in the same household.

[3]Low-skilled workers are defined as high school dropouts or lower and high-skilled workers are defined as workers who have finished high school

2 Literature Review

My analysis relates to several strands of the literature: (a) research on the impact of immigration, in particular the impact on native teens and fertility decisions; (b) research on the teen fertility, including the relationship between teen fertility, education, and labor market expectations of teenagers.

My study completes and extends the literature on how immigration affects the native population in the U.S.. Some analysts find that immigrant inflows influence the labor market outcomes of natives (Borjas, 1994; Card and Butcher 1991; Borjas, 2006; Peri and Sparber, 2009). Some research also find that immigrant inflows affect natives' expectations and alter their education decisions (Betts, 1998; McHenry, 2015; Hunt, 2017; Betts and Fairlie, 2003; Cascio and Lewis, 2012). These studies reveal that immigrant inflows affect natives' decisions by altering their expectations of how competitive the local labor market is. If native teenagers expect to face a competitive labor market due to immigration, would they also respond by avoiding risky behaviors like crime or teen pregnancy? To my knowledge, the present study is the first to examine the impact of immigration on risky behavior by focusing on the native teen fertility rate. The literature also stress the important need to consider the identification issues related to endogenous location decisions of immigrants, and to consider the heterogeneous responses of women at different skill levels. I incorporate these insights in this analysis.

Moreover, I contribute to the literature on how immigrant inflows affect fertility responses of native women. The seminal papers in the literature focus on fertility of adult women. Seah (2018) utilizes a natural experiment from the Mariel Boatlift to estimate the effect of immigration on fertility decisions. Furtado (2016) investigates the fertility responses of high-skilled native women using instrumental variable. She finds that the probability of having a baby for high-skilled women is increased due to immigrant inflows, especially for married women with a graduate degree. However, teen fertility may be different from fertility decisions of adult women. For example, motherhood may cause teenagers to drop out of school. Thus, by investigating teen fertility, my paper complements the literature.

Understanding the causes and effects of teen fertility is important for policy-making. Given that teen fertility may have long-term impacts on future generations (Kearney and Levine, 2007; Kahn and Anderson, 1992), policymakers frequently focus on efforts to reduce the rate of teen childbearing in order to improve the economic outcomes of teenagers. However, the endogeneity challenges in estimating the causal effect of have contributed to debate among researchers over this question. Some research finds that teen fertility can cause harm on teenage girls by reducing the educational attainment and wages (Moore and Waite, 1977; Card, 1981;

Upchurch and McCarthy, 1990;Grogger and Bronars, 1993; Klepinger, Lundberg and Plotnick, 1997; Lundberg and Plotnick, 1999; Chevalier and Viitanen, 2003; Levine and Painter, 2003; Ashcraft and Lang, 2006; Montmarquette, Viennot-Briot, and Dagenais, 2007; Miller, 2009; Fletcher and Wolfe, 2009). Moreover, teen fertility usually increases the risk of low-birth-weight babies and perinatal infant mortality (Martin et al., 2010; Mathews and MacDorman, 2010). However, some studies hold the opinion that other factors cause both teen fertility and inferior economic outcomes, and claim that teen pregnancy is a result, not a cause (Ribar 1992, 1994; Lundberg and Plotnick 1989; Hotz, McElroy and Sanders, 2004; Kearney and Levine, 2012; Holmlund 2005). Several studies mention that adolescents who become teen mothers see no other life goals within their reach, and have low educational expectations (Winter, 1997; Coles, 2005; Koshar, 2001; Rothenberg and Weissman, 2002). The insight from the previous literature shows that expected future earnings affect teen fertility decisions. Motivated by this research, I consider the impact of immigration on native teen fertility as the net effect of two channels. The first channel is that increased immigrant inflows might reduce the opportunity costs of teen motherhood and increase teen fertility rates in the US. Second, native teens may be motivated to avoid teen fertility to be better prepared for a more competitive labor market, due to the supply of immigrants.

My study shows that, even though immigrant inflows reduce expected future earnings, the desire to perform well in the labor market motivates teenagers to stay enrolled in school to achieve higher education attainment, and also inspires them to avoid risky behavior like teen fertility. My study thus reveals the importance of considering the three correlated goals together in policy making. Policies that aim to decrease teen pregnancy may be able to improve labor market outcomes, and at the same time, policies that improve teen schooling and labor markets may discourage teen fertility by providing a clearer path towards economic opportunities for young women.

3 Empirical Strategy

Empirically identifying the direction of the impact of low-skilled immigrant inflows on teen fertility is important because the theoretical direction is ambiguous. When low-skilled immigrants inflows are greater, native youth may reduce fertility to be better prepared because they face increased pressure from these immigrants who potential substitutes in the local labor market. However, if low-skilled immigrant inflows lead to teenage girls anticipating worse labor market outcomes, inflows may also increase teen childbearing by reducing the opportunity cost of teen fertility.

I first consider a baseline fixed-effects linear probability model[4]

$$CHILD_{ist} = \beta_0 + \beta_1 I_{st} + \beta_2 X_{ist} + \gamma_s + \gamma_{jt} + \epsilon_{ist} \tag{1}$$

$CHILD_{ist}$ is equal to one if native teenage girl i living in metropolitan area s in year t has a child and zero otherwise. The share of low-skilled, working age immigrants in MSA s in year t is denoted by I_{st}. The vector of controls, X_{ist}, includes marriage status, race, age. MSA and region j $\times$ decade fixed effects are denoted as γ_s and γ_{jt} respectively. Region is defined as census region and division. The MSA dummies capture unobserved, time-invariant MSA specific effect, such as unchanged geographic characteristics or culture of cities from 1980 to 2000. Region $\times$ decade fixed effects capture common annual shocks at the region level, for instance, a region level policy change related to teen pregnancy. I cluster the standard errors at MSA $\times$ year level.

However, location decisions of immigrants are not exogenous conditional on the controls used in the baseline fixed effects model. Low-skilled immigrants may be attracted to areas with booming labor markets. They may also prefer to locate in areas with better schools, lower prices, or less anti-immigrant sentiment. If these factors are time-varying, the fixed effect specification will yield biased estimates (β_1)—the impact of the share of low-skilled, working age immigrants on teen fertility. To address this, I follow other analysts (Bartel, 1989; Card, 2001; Cortes, 2008; Furtado, 2016; Hunt,2017) and use predicted flows of the share of immigrants as an instrument to identify β_1. The instrument, which exploits the fact that immigrants tend to settle in cities with large enclaves of immigrants from their same original country, addresses the endogenous location decisions of immigrants caused by time-varying economic and policy factors that are not absorbed by city and region by decade effects. The instrument is valid if differential changes in relative economic conditions across MSAs from 1980 to 2000 are not correlated with (i)1970 immigrant distributions and (ii) the overall inflow of low-skilled immigrants to the United States, conditional on the controls in X_{ist}. As an example, a violation of the identifying assumptions could occur if policies that discourage teen fertility are more intense in areas with a higher share of immigrants in 1970. One influential teen fertility grant program, the Teen Pregnancy Prevention Program and Pregnancy Assistance Fund, was not established until after 2000, so this particular program does not affect estimates in this study.

I construct an instrument for I_{st} as follows.

$$\Delta LMS_s = \sum_z \frac{M_{zs,1970}}{M_{z,1970}} \times \frac{(N_{zt} - N_{z,t-10})}{N_{z,t-10}} \tag{2}$$

[4]I also use probit model, which can be found in the Appendix C. The results do not differ significantly.

For each MSA s, I calculate $\frac{M_{zs,1970}}{M_{z,1970}}$, which represents that among all immigrants from country z in the U.S. in 1970, what share of them resided in MSA s. $(N_{zt} - N_{z,t-10})$ stands for the national change in the number of low-skilled immigrants from country z between year t and the previous census, in year $t-10$. Since the key independent variable of interest is the share of low-skilled immigrants, I transform the number of immigrants into a share by dividing by $N_{z,t-10}$. The final instrument is ΔLMS_s.

4 Data

The primary data source is U.S. decennial census from 1980, 1990 and 2000. The 1970 sample is also used to construct instrumental variable. I obtain the data from the Integrated Public Use Microdata Series (IPUMS), which preserves and harmonizes U.S. census microdata. These data have several attributes that make them ideal for this study. First, U.S. decennial census data from 1980-2000 provide a large sample size, which is necessary because teen fertility is a relatively rare event. Second, information about citizenship and birthplace make it possible to identify whether an individual is an immigrant. Third, U.S. Census data include information about own children in the household, such as the age of the oldest child, the age of the youngest child and the number of children. This information enables identifying whether teenage girls in the sample had a baby in the previous year.

The data have some limitations. First, if a mother who gave birth in the previous year does not reside with her baby, information related to this birth is not included in the data. Thus, I do not count her in the constructed fertility measures. Second, stepmothers and adoptive mothers are treated as if they gave birth. Third, teenagers who have abortions or give their child up for adoption are not observed as having become pregnant.

4.1 Sample selection

The baseline analysis uses two sub-samples. The *first* one is restricted to low-skilled immigrants and non-immigrants of working age. This sample is utilized to construct the key independent variable: share of low-skilled immigrants in a metropolitan area in a specific census year. I restrict the sample to people between the ages of 16 and 64, who are in labor force, not enrolled in school, who have not finished high school and do not reside in group quarters.[5] A person is considered as an immigrant if her birthplace is outside of US and she is either a non-citizen or a naturalized citizen. A worker is classified as low-skilled if she has not complete high school.

[5]I follow Cortes and Tessada (2011) to not include immigrants living in group quarters. The reason is that immigrants in custody or military have little impact on natives in usual neighborhoods.

Furtado (2016) finds that share of low-skilled female immigrants is almost perfectly correlated with the share of low-skilled male immigrants. Thus, given that I cannot include both separately in the regressions, I chose to use the total share of low-skilled immigrants. This choice is also consistent with prior research in this literature. Moreover, it is natural to consider to use young and unskilled immigrants as they are closer substitutes for young and unskilled native born youth. Moreover, it may be natural to consider only young and unskilled immigrants, since they are closer labor force substitutes for young and unskilled native born youth. However, the instrument is too weak when limiting the immigrant sample to this smaller subgroup. In the future research with richer data, the possibility of matching immigrant characteristics to those of native youth can be explored.

The *second* sample contains native teenage girls enrolled in high school, aged 14 to 18. Native girls who have finished high school are excluded from this sub-sample. I also restrict the sample to those who are classified as enrolled in school in the data set. One reason for this selection criterion is that girls who have finished high school may face different decision making problem from high school students. For example, high school students need to decide to complete high school or not. Native girls in the labor force are also dropped. These girls who have already entered the labor force may make different fertility decisions than those of girls in school, which may be based in part on their experiences in the labor force. The sample does contain married teenagers. Marriage is an endogenous outcome as teenagers may get married when they become pregnant, making it an interesting characteristic of this sample.

I define local labor markets based on metropolitan areas rather than states, since states are more heterogeneous in economic conditions. However, the underlying geographic definitions of metropolitan statistical areas by the Census Bureau have changed over time. The resulting changes over time make it difficult to construct comparable analysis samples across years. To reduce the influence of these definitional changes, I follow Cortes and Tessada (2011) and include only the 116 MSAs that have consistent codes in IPUMS between 1970 and 2000. Although these MSAs may still consist of different counties, or parts of counties, in different years, the areas that enter and exit MSAs typically have small populations, and are unlikely to generate large inaccuracies (Furtado, 2016).

4.2 Key covariates

Race and ethnicity Girls of different races and ethnicities have different propensities of having a baby as a teenager (Martin et al. 2011). To account for these differences, I include a binary control for black respondents, other non-white minority respondents, and hispanic

respondents. These controls also account for the possibility that native minorities, such as African Americans and Hispanics, may live in closer proximity to immigrants than native non-Hispanic whites, and thus may be more responsive to immigrants inflows (Hunt, 2017).

Age I include control for age linearly as teen fertility tend to increase in age (Martin et al.2016). Responses may be different for native youth with different age. Thus, age should be considered in the analysis.

Marital status Furtado (2016) finds that the fertility increase of native high-skilled adult women in response to low-skilled immigrant inflow is mainly explained by married women. Marital status is also important for teens, though it may be an endogenous outcome. It is possible that teenagers who married early tend to have babies early. It is also possible that after getting pregnant, young couples choose to get married. This decision may also influence the choice of whether to have an abortion. Marital status is included in the model as a control to account for both marriages that led to pregnancies, and marriages that influenced whether a child birth is observed in the data. Note that cohabitation is classified as never married/single, which is a limitation of the data, making it impossible to control for the cohabiting effect.

4.3 Descriptive statistics

Table 1 provides descriptive statistics of the variables in the study, both in total and separated by whether immigrant share is above or below the mean among the cities. The mean fertility overall is 0.677%, which means around 0.677 out of 100 teenage girls had babies in the past one year. The fertility rate of native-born youth is 0.694% in cities with a low share (below average) of immigrants, and 0.660% in high share cities. This raw correlation is consistent with the possibility that higher immigrant inflows increase native teen fertility rates. However, the gap in fertility rates may also be explained by other factors such as the proportion of native teenage girls who are married across the two types of cities. There are also more native-born teenage girls are Hispanic and defined as "other race" in cities with higher share of low-skilled immigrants. The possibilities cannot be differentiated using only descriptive statistics.

5 Results

5.1 Baseline Results

Table 2 presents baseline linear probability model results.[6] Column 1 is a simple OLS regression with the full set of controls: age, marital status, race, and ethnicity. Unobserved time invariant city-level characteristics can both affect teen fertility of native girls and attract

[6]The probit model results are presented in Appendix B. The results reveal the same pattern as linear probability model.

low-skilled immigrants. Thus, MSA and region-decade fixed effects are introduced in columns 2 and 3 to address the city-specific time-invariant unobserved characteristics and common annual shocks at region levels. After adding fixed effects, the new estimated coefficient becomes more negative, suggesting that in the cross-section, cities with large immigrant populations also tend to have higher native teen fertility rates. Moreover, adding MSA fixed effects causes a larger reduction in fertility rate than adding region by decade effects. This suggests that the time-invariant unobserved city characteristics have a larger relative impact on immigrant inflows.

However, as I discussed in the empirical strategy section, estimates from fixed effect model will be biased if there are time-varying determinants of teen fertility that are correlated with the size of the immigrant population in a city. For example, if low-skilled immigrants choose to locate in cities with booming labor markets, and native teen girls are less likely to have babies in these cities, the fixed effects models will yield overestimates of the true impact of immigrant inflows. The IV model can address this potential source of bias. IV estimates are presented in Column 4 of Table 2. The results suggest that a one standard deviation increase in the share of low-skilled immigrants reduces the probability of native teen fertility by 25%, from the baseline probability 0.677% to 0.510%. The F statistic of 14.58 reveals a fairly strong first stage relationship. However, the difference between the IV and FE estimates is not as large as the impact of adding city effects in the model, which suggests that static unobserved city characteristics are a more important source of endogeneity than time-varying regional and MSA factors.

5.2 Heterogeneous response

In this section, I test whether native teenage girls who are likely to become low-skilled workers (defined as high-school dropouts in this study) are more responsive to immigrants inflows than girls likely to become high-skilled workers. Potential low-skilled native girls are those who are more likely to become substitutes for low-skilled immigrants. On the one hand, they face more competition in the future, which encourages them to build up human capital, avoid teen fertility and finish high school. On the other hand, the lowered opportunity cost of being a teen mother may lead to an increase in teen fertility rate.

However, I do not observe direct measure of potential skill level of teenage girls. To overcome this difficulty, I use parents' education and family structure as controls based on the idea that they serve as good predictors of children's future skill levels. Teens who have parents with relative lower education attainment or raised in single parent families are more likely to become low-skilled workers when they enter labor market. I also compare outcomes based

on racial and demographic variables, since these too are correlated with high school completion rates.

I report estimates from both the fixed effects and IV models in Table 3. Columns 1 and 2 compare the results for Hispanic and non-Hispanic girls. The coefficients for Hispanic girls from fixed effect model with MSA dummies and region-year dummies is more negative than non-Hispanic girls. We can see that black native girls (Column 4) are more sensitive to the immigrants inflows than to white girls (Column 3). These results are consistent with the hypothesis that low-skilled native teen girls are more sensitive to immigrant inflows than high-skilled girls. The IV coefficients for Hispanic and black girls is no longer statistically significant. One potential reason might be the large standard error due to a small sample size.

In Columns 5 to 6 I focus on the subsamples of households with both parents, and present the heterogeneous responses of potentially high-skilled families and low-skilled families. I only discuss the IV model results because FE model and IV model share the same pattern. Column 5 is restricted to a sample of native teenage girls whose mothers have finished high school, while Column 6 contains the sample of girls whose mothers dropped out of high school. The results reveal that girls with less educated mothers are highly responsive to the increased share of low-skilled immigrants. For these potential low-skilled girls, a one standard deviation increase in the share of low-skilled immigrants reduces the probability of native teen fertility by 68.7%, from the baseline probability 0.677% to 0.212%. The impact is much higher than the effect on potential high-skilled girls (of 19%, from the baseline probability 0.677% to 0.551%). One explanation for the empirical results is that native teenage girls who are more likely to become low-skilled workers and face the direct competition from low-skilled immigrant inflows have a higher incentive to avoid teen fertility.

6 Impact of low-skilled immigrants on school enrollment of native teenage girls

In this section, I present a discussion of how immigrant inflows affect the probability of native teen girls of enrolling in school. Facing a more competitive labor market with immigrant inflows, native teenage girls may not only try to avoid teen fertility but also choose to continue studying in school. However, the decreased opportunity cost of staying in school may also induce a reduced probability of staying in school. Thus, I hypothesize that school enrollment rates among natives increase with the share of low-skilled immigrants in town. Moreover, I hypothesize that a potential low-skilled girl is more sensitive than a potential high-skilled girl to immigrant inflows.

I focus on girls who are currently not in the labor force and who did not have a child in the past year. Baseline results are presented in Table 4, Column 1. The estimated impact of immigrant inflows on school enrollment from the fixed effect model is 0.189, and the IV estimate is 0.160. Thus, immigrant inflows increase the probability that native teenage girls will stay in school. The IV estimates show that a one standard deviation increase in the share of low-skilled immigrants increases the probability of enrolling in school by 0.9%, from the baseline probability 94.6% to 95.5%. This pattern of enrollment effects is consistent with the findings on native teen fertility rates. Native teens in areas with higher share of low-skilled immigrants have a higher incentive to stay enrolled in high school to build up human capital.

I also explore the heterogeneous responses of native teen girls. The fixed effects model reveals that hispanic girls may be more responsive than non-hispanic girls, and black girls are more sensitive than white girls. In Column 6 and 7, I focus on the subsamples of households with both parents and present the heterogeneous response of potentially high-skilled families and low-skilled families. Column 6 is restricted to a sample of native teenage girls whose mothers have finished high school, while in Column 7, the mothers are high school dropouts. The IV coefficient is 0.067 in Column 6, which is lower than 0.239 in Column 6. Thus, girls who have high school dropout mothers (Column 6) are more strongly responsive to the increased share of low-skilled immigrants. These findings provide evidence for the hypothesis that a potential low-skilled girl is more likely to stay enrolled in school than a potential high-skilled girl, which is consistent with the findings for teen fertility.

When applying instrumental variable approach, the coefficients for Hispanic, non-Hispanic, black and potential High-skilled girls are no longer statistically significant. One potential reason might be insufficient large sample size for each analysis, especially for the Hispanic and black subsamples. The analysis for the black subsample suffers from weak instrument problem,making the result less credible. However, it is also possible that Non-Hispanic, black or potential high-skilled girls do not respond to immigrants inflow by staying enrolled in school. Future research can investigate further on these groups of population.

7 Conclusion

This study builds on a growing literature on how immigrants influence natives. My work complements the body of work on responses of native teenagers by investigating one type of risky behavior: teen fertility. In order to estimate the impact of immigration, I used a common instrumental variable approach—predicted share of low-skilled immigrants from historical en-

claves in each metropolitan areas to deal with the concern that immigrants do not choose locations randomly. My analysis also stresses the importance of considering the education decision, expectations about future labor market outcomes, and the fertility of teenagers jointly when choosing public policies, since the three are strongly connected to each other.

My major findings are as follows. First, I found that low-skilled immigration to US between 1980 to 2000 led to a substantial reduction in the native teen fertility rate. The baseline estimate implies that a one standard deviation increase in the share of low-skilled immigrants reduces the probability of native teen fertility by 25% to 0.510% from the baseline 0.677%. Second, girls who are more likely to be low-skilled workers in the future are more likely to be influenced by immigrant inflows. Finally, I also find that the rate of staying enrolled in high school is increasing with the share of low-skilled immigrants.

This study highlights one potential beneficial impact of immigration on native teen girls. The large reduction in teen fertility due to immigrant inflow found in my study are useful information in relevant policy making. Given the heterogeneous impact of immigration on different subgroups of teen girls, policies should be altered to fit the special needs of particular demographic groups. Though there remain many unknown relationships between immigration rates and native outcomes, the aim of this paper is to better understand one aspect of decision-making surrounding risky behaviors—teen fertility. This is only one of undoubtedly many interesting and policy-relevant types of risky behavior that could be studied in this context.

8 References

Betts,J. (1998). The Impact of Educational Standards on the Level and Distribution of Earnings. *American Economic Review*, 88(1), pp.266-75

Betts, J. & Fairlie, R., (2003). Does immigration induce 'native flight' from public schools into private schools?*Journal of Public Economics*, 87(5-6), pp. 987-1012.

Boustan, L. (2007). Was Postwar Suburbanization 'White Flight'? Evidence from the Black Migration. National Bureau of Economic Research Working Paper 13543.

Borjas,G.(2005).The Labor-Market Impact of High-Skill Immigration.*American Economic Review*, 95(2), pp. 56-60.

Cascio,U., and Ethan, L. (2012). Cracks in the Melting Pot: Immigration, School Choice, and Segregation.*American Economic Journal: Economic Policy*, 4 (3),pp. 91-117.

Cortes, P. (2008). The Effect of Low-Skilled Immigration on U.S. Prices: Evidence from CPI Data. *Journal of Political Economy*, 116(3), pp.381-422.

Eckstein, Z., and Wolpin,K. I. (1999) "Why Youths Drop Out of High School: The Impact of Preferences, Opportunities, and Abilities," *Econometrica*,67, pp. 1295–1339.

Furtado,D. (2016), Fertility Responses of High-Skilled Native Women to Immigrant Inflows, *Demography*, 53(1), pp.27-53

Hotz, V., McElroy, S., & Sanders, S. (2005). Teenage Childbearing and Its Life Cycle Consequences: Exploiting a Natural Experiment. *The Journal of Human Resources*, 40(3), pp.683-715.

Hunt,J.(2017). The Impact of Immigration on the Educational Attainment of Natives.*Journal of Human Resources*,52(4),pp.1060-1118.

Kearney, S., and Phillip L. (2012). Why Is the Teen Birth Rate in the United States So High and Why Does It Matter? *Journal of Economic Perspectives*, 26 (2),pp. 141-63.

Kearney,S. & Levine,P. (2009). Subsidized Contraception, Fertility, and Sexual Behavior, *The Review of Economics and Statistics*, 91(1), pp. 137-151.

Klepinger,D.,Lundberg,S. and Plotnick,R, (1999), How Does Adolescent Fertility Affect the Human Capital and Wages of Young Women?, *Journal of Human Resources*, 34(3),pp. 421-448

Martin, J., Hamilton, B., Ventura,S., Osterman,M., Kirmeyer,S., Mathews,T., and Elizabeth C. Wilson,E., (2011). Births: Final Data for 2009.*National Vital Statistics Reports* , vol. 60, no. 1.

Montmarquette,C., Viennot-Briot,N. and Dagenais,M.(2007) Dropout, School Performance, and Working while in School. *The Review of Economics and Statistics*,89(4),pp.752-760

Martin,J., Hamilton, B.,Osterman,M., Driscoll,A. and Drake,P.,(2018)Births: Final Data for 2016 McHenry,P. (2015).The Impact of Immigration on the Educational Attainment of Natives. *Journal of Human Resources*, 50(1),pp.34-71.

Peri,G. and Sparber,C. (2009), Task Specialization, Immigration, and Wages, *American Economic Journal: Applied Economics*, 1(3), pp.135-69

Seah, Kelvin K. C.(2018) The Effect of Immigration Shocks on Native Fertility Outcomes: Evidence from a Natural Experiment. *IZA Journal of Development and Migration*, 8(1),pp.1-34.

Angrist,J., and Lavy,V. 1996. The Effect of Teen Childbearing and Single Parenthood on Childhood Disabilities and Progress in School. NBER working paper 5807.

Bennett, G., Bloom,D., and Miller,C. 1995. The Influence of Nonmarital Childbearing on the Formation of First Marriages. *Demography*, 32(1):47–62.

Bound, John, and Gary Solon. 1999. "Double Trouble: On the Value of Twins-Based Estimation of the Return to Schooling." Economics of Education Review 18(2):169–82.

Bronars, Stephen G., and Jeff Grogger. 1993. "The Socioeconomic Consequences of Teenage Childbearing: Findings from a Natural Experiment." Family Planning Perspectives 25(4):156–61, 174.

———. 1994. The Economic Consequences of Unwed Motherhood: Using Twin Births as a Natural Experiment." American Economic Review 84(5):1141–56.

Card, Josefina J., and Lauress L. Wise. 1978. "Teenage Mothers and Teenage Fathers: The Impact of Early Childbearing on the Parents' Personal and Professional Lives." Family Planning Perspectives 10(4):199–205.

Ermisch, John, and David J. Pevalin. 2003. "Does a 'Teen-birth' Have Longer-term Impacts on the Mother? Evidence from the 1970 British Cohort Study." ISER Working Papers, pp. 2003–28.

Geronimus, Arline T., and Sanders Korenman. 1992. "The Socioeconomic Consequences of Teen Childbearing Reconsidered." The Quarterly Journal of Economics 107(4):1187–1214.

Geronimus, Arline T., Sanders Korenman, and Marianne M. Hillemeier. 1994. "Does Young Maternal Age Adversely Affect Child Development? Evidence from Cousin Comparisons in the United States." Population and Development Review 20(3):585–609.

Hoffman, Saul D., E. Michael Foster, and Frank F. Furstenberg Jr. 1993. "Reevaluating the Costs of Teenage Childbearing." Demography 30(1):1–13.

Hotz, V. Joseph, Susan Williams McElroy, and Seth G. Sanders. 2004. "Teenage Childbearing and Its Life Cycle Consequences: Exploiting a Natural Experiment." Journal of Human Resources. This issue.

Levine, I. David, and Gary Painter. 2003. "The Schooling Costs of Teenage Out-of-Wedlock Childbearing: Analysis with a Within-School Propensity Score Matching Estimator." Review of Economics and Statistics 85(4):884–900.

Klepinger, Daniel, Shelly Lundberg, and Robert Plotnick. 1999. "How Does Adolescent Fertility Affect the Human Capital and Wages of Young Women?" Journal of Human Resources 34(3):421–48.

Olsen, Randall J., and George Farkas. 1989. "Endogenous Covariates in Duration Models and the Effect of Adolescent Childbirth on Schooling." Journal of Human Resources 24(1):39–53.

Ribar, David C. 1994. "Teenage Fertility and High School Completion." Review of Economics and Statistics 76:413–24.

———. 1999. “The socioeconomic consequences of young women’s childbearing: Reconciling disparate evidence.” Journal of Population Economics 12(4):547–65.

Rosenzweig, Mark R., and Kenneth I. Wolpin. 1995. “Sisters, Siblings, and Mothers: The Effect of Teen-age Childbearing on Birth Outcomes in a Dynamic Family Context.” Econometrica 63(2):303–26.

Amuedo-Dorantes, C., and Sevilla, A. (2014). Low-skilled immigration and parenting investments of college educated mothers in the United States: Evidence from time-use data. Journal of Human Resources, 49, 509–539.

Barone, G., and Mocetti, S. (2011). With a little help from abroad: The effect of low-skilled immigration on the female labour supply. Labour Economics, 18, 664–675.

Bartel, A. P. (1989). Where do the new U.S. immigrants live? Journal of Labor Economics, 7, 371–391.

Card, D. (2001). Immigrant inflows, native outflows, and the local labor market impacts of higher immigration. Journal of Labor Economics, 19, 22–64.

Farré, L., González, L., and Ortega, F. (2011). Immigration, family responsibilities, and the labor supply of skilled native women. B.E. Journal of Economic Analysis & Policy, 11, 1–46.

Friedberg, R., and Hunt, J. (1995). The impact of immigrants on host country wages, employment and growth. Journal of Economic Perspectives, 9(2), 23–44.

Furtado, D. (2015). Can immigrants help women “have it all”? Immigrant labor and women’s joint fertility and labor supply decisions. IZA Journal of Migration. Advance online publication. doi:10.1186/s40176- 015-0043-x

Furtado, D., and Hock, H. (2010). Low-skilled immigration and work-fertility tradeoffs among high-skilled US natives. American Economic Review, 100, 224–228.

Ottaviano, G., and Peri, G. (2012). Rethinking the effect of immigration on wages. Journal of the European Economic Association, 10, 152–197.

Cortés, P., and Tessada, J. (2011). Low-skilled immigration and the labor supply of highly educated women. American Economic Journal: Applied Economics, 3, 88–123.

Table 1: Descriptive statistics-Key variables by Metropolitan areas (Percentage)

	(1)		(2)		(3)	
	Total		Below mean immigrant share		above mean immigrant share	
	Mean	SD	Mean	SD	Mean	SD
share of low-skilled immigrants	4.270	4.514	1.252	1.019	7.257	4.645
Child	0.677	8.202	0.694	8.304	0.660	8.100
Black	20.314	40.233	20.856	40.628	19.776	39.831
Other race	8.565	27.984	3.508	18.399	13.571	34.248
Hispanic	12.011	32.510	3.528	18.449	20.411	40.305
Married	0.822	9.028	0.762	8.698	0.881	9.343
Age	15.453	1.276	15.436	1.272	15.469	1.279
N	457539		223048		234491	

Notes: This table compares key variables between Metropolitan areas with high and low share of low-skilled immigrants among the 116 MSAs from 1980 to 2000 (in total 348 cities). The low percentage sample includes people residing in MSAs where the share of low-skilled immigrants is below the mean for the entire sample. Both mean and standard deviations are shown in the table. Child equals 1(100%) if a native teenage girl has a child last year (age is less than one) in the household and zero otherwise. The variables age, Married, Black,Other race, Hispanic are all indicator variables.

Table 2: Impact of low-skilled immigrants on native teen fertility: baseline model

	Dependent Variable: Child			
	OLS	FE	FE	IV
	(1)	(2)	(3)	(4)
Share of Low-skilled immigrants	–0.015*	–0.019*	–0.030*	–0.037*
	[0.003]	[0.004]	[0.007]	[0.017]
Age	0.005*	0.005*	0.005*	0.005*
	[0.000]	[0.000]	[0.000]	[0.000]
Married	0.094*	0.094*	0.093*	0.093*
	[0.007]	[0.007]	[0.007]	[0.007]
Black	0.012*	0.012*	0.013*	0.013*
	[0.001]	[0.000]	[0.001]	[0.001]
Other race	0.004*	0.004*	0.004*	0.004*
	[0.001]	[0.001]	[0.001]	[0.001]
Hispanic	0.007*	0.007*	0.007*	0.007*
	[0.001]	[0.001]	[0.001]	[0.001]
Constant	–0.068*	–0.068*	–0.070*	–0.069*
	[0.003]	[0.003]	[0.004]	[0.004]
N	457,539	457,539	457,539	457,539
R-Sq	0.022	0.022	0.022	0.022
MSA fixed effect	No	No	Yes	Yes
Region × Year fixed effect	No	Yes	Yes	Yes
First stage F				14.58
One SD Scaled Effect %	-0.068	-0.086	-0.135	-0.167

Notes: This table reports the estimates of impact of share of low-skilled immigrants on native teen fertility for the baseline model. Native teenage girls are aged from 14 to 18 who are not in labor force and enrolled in high school. Dependent variable is "Child", which equals to one if a native teenage girl living in a particular metropolitan area in a specific year has a child last year (age is less than one) in the household and zero otherwise. The key independent variable of interest is share of low-skilled immigrants. It is defined as amount of immigrants who are working age high school dropouts divided by working age (16 to 64) labor force. The variables age, Married, Black,Other race, Hispanic are all indicator variables. Standard errors, in brackets, are clustered at the city × year level. The First stage F statistic is reported using Sanderson-Windmeijer (SW) multivariate F test of excluded instruments F statistics. * indicates significance at the 0.05 level. "One SD Scaled Effect %" row reports how one standard deviation increase in the share of low-skilled immigrants affect the probability of childbearing of native teenage girls (in percentage form).

Table 3: Heterogeneous impacts of low-skilled immigrants on native teen fertility

	Dependent Variable: Gave Birth in Previous Year					
	(1)	(2)	(3)	(4)	(5)	(6)
	Non-Hispanic	Hispanic	White	Black	High-skilled	Low-skilled
FE	–0.032*	–0.067*	–0.009	–0.070*	–0.022*	–0.050*
	[0.006]	[0.028]	[0.005]	[0.020]	[0.007]	[0.010]
(One SD Scaled Effect: FE %)	–0.144	–0.302	–0.041	–0.316	–0.010	–0.226
IV	–0.050*	–0.056	0.003	–0.065	–0.028*	–0.103*
	[0.016]	[0.062]	[0.014]	[0.066]	[0.013]	[0.033]
(One SD Scaled Effect: IV %)	–0.226	–0.253	–0.0135	–0.293	–0.126	–0.465
N	402,041	55,498	329,426	88,267	144,447	179,831
MSA fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
Region × Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
First stage F	12.54	30.46	13.00	7.55	18.02	11.39

Notes:This table reports the estimates of impact of share of low-skilled immigrants on native teen fertility for different subsamples. Dependent variable is "Child", which equals to one if a native teenage girl living in a particular metropolitan area in a specific year has a child last year (age is less than one) in the household and zero otherwise. The key independent variable of interest is share of low-skilled immigrants. It is defined as amount of immigrants who are working age high school dropouts divided by working age (16 to 64) labor force. The variables age, Married, Black,Other race, Hispanic are all indicator variables. Model 1 and 2 compare non-Hispanic subsample and Hispanic subsample. Model 3 focuses on white subsample, while model 4 focuses on black subsamples. Model 5 focus on teenagers with mothers who finishes high school, while Model 6 focus on mothers who do not finish high school. Standard errors, in brackets, are clustered at the city × year level. The First stage F statistic is reported using Sanderson-Windmeijer (SW) multivariate F test of excluded instruments F statistics. * indicates significance at the 0.05 level. "One SD Scaled Effect" row reports how one standard deviation increase in the share of low-skilled immigrants affect the probability of childbearing of native teenage girls (in percentage form).

Table 4: Impact of low-skilled immigrants on school enrollment of native teenage girls

	Dependent Variable: School enrollment						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Baseline	Non-Hispanic	Hispanic	White	Black	High-skilled	Low-skilled
FE	0.189*	0.149*	0.218*	0.161*	0.192*	0.067*	0.239*
	[0.023]	[0.028]	[0.077]	[0.022]	[0.052]	[0.027]	[0.032]
(One SD Scaled Effect: FE %)	0.853	0.673	0.984	0.727	0.867	0.302	1.08
IV	0.160*	0.073	0.220	0.131*	–0.038	0.039	0.244*
	[0.051]	[0.051]	[0.143]	[0.045]	[0.134]	[0.070]	[0.078]
(One SD Scaled Effect: IV %)	0.722	0.330	0.993	0.591	-0.172	0.176	1.101
N	461,065	403,872	57,193	331,517	89,683	142,714	183,666
MSA fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region × Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes
First stage F	14.138	12.040	30.447	12.818	6.955	17.995	11.244

Notes:This table reports the estimates of impact of share of low-skilled immigrants on native teenage girls' school enrollment probability for different supsamples. Dependent variable is "School", which equals to one if a native teenage girl living in a particular metropolitan area in a specific year is enrolled in school and zero otherwise. The key independent variable of interest is the share of low-skilled immigrants. It is defined as amount of immigrants who are working age high school dropouts divided by working age (16 to 64) labor force. The variables Age, Married, Black, Other race, Hispanic are all indicator variables. Model 1 presents the results for baseline IV model. Model 2 focuses on non-Hispanic subsample, Model 3 focuses on Hispanic subsample. Model 4 shows result for white subsample while Model 5 shows result for the Black subsample. Model 6 are teenagers with mothers who finishes high school, while Model 7 are girls whose mothers do not finish high school. All models are linear probability models. Standard errors, in brackets, are clustered at the city × year level. * indicates significance at the 0.05 level. "One SD Scaled Effect" row reports how one standard deviation increase in the share of low-skilled immigrants affect the probability of enrolling in school of native teenage girls (in percentage form).

9 Appendix

9.1 Appendix A

This table shows the results for 0-25th, 25-50th, 50-75th, 75-100th percentiles in the distribution of share of low-skilled immigrants among the 116 cities from 1980 to 2000 (in total 348 MSAs).

Table 5: Share of low-skilled immigrants of 116 metropolitan areas(percentage)

	Total		1980		1990		2000	
	mean	sd	mean	sd	mean	sd	mean	sd
0-25th percentile	0.599	0.330	0.279	0.0948	0.588	0.161	0.929	0.285
25-50th percentile	1.29	0.678	0.613	0.159	1.19	0.256	2.08	0.438
50-75th percentile	3.03	1.64	1.506	0.467	2.89	0.963	4.69	1.36
75-100th percentile	10.4	5.91	5.85	3.41	11.4	5.53	14.1	5.33
Overall	3.84	4.98	2.06	2.82	4.01	5.15	5.45	5.87
Sample size	348		116		116		116	

Notes: This table presents mean and standard deviations for key independent variable-share of low-skilled immigrants for the total sample and subsamples: cities with share of low-skilled immigrants at 0-25th, 25-50th,50-75th and 75-100th percentile in the distribution of share of low-skilled immigrants among the 116 MSAs from 1980 to 2000 (in total 348 cities).Share of low-skilled immigrants is defined as amount of immigrants who are working age high school dropouts divided by working age (16 to 64) labor force. The summary statistics for this share in each year from 1980 to 2000 is also presented in the table.

9.2 Appendix B: Robustness check: Baseline model

This table shows the results for different models. The models differ in the control variables included. From this table, it is necessary to include race and ethnicity in the analysis.

Table 6: Impact of low-skilled immigrants on native teen fertility

	Dependent Variable: Gave Birth in Previous Year				
	FE	IV	IV	IV	IV
	(1)	(2)	(3)	(4)	(5)
Share of Low-skilled immigrants	–0.030*	–0.028	–0.038*	–0.031	–0.037*
	[0.007]	[0.018]	[0.018]	[0.018]	[0.017]
Age	0.005*	0.005*	0.005*	0.005*	0.005*
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Married	0.093*	0.095*	0.094*	0.094*	0.093*
	[0.007]	[0.007]	[0.007]	[0.007]	[0.007]
Black	0.013*			0.012*	0.013*
	[0.001]			[0.001]	[0.001]
Other race	0.004*			0.006*	0.004*
	[0.001]			[0.001]	[0.001]
Hispanic	0.007*		0.006*		0.007*
	[0.001]		[0.001]		[0.001]
Constant	–0.070*	–0.070*	–0.070*	–0.069*	–0.069*
	[0.004]	[0.004]	[0.004]	[0.004]	[0.004]
N	457,539	457,539	457,539	457,539	457,539
R-Sq	0.022	0.019	0.019	0.022	0.022
MSA fixed effect	Yes	Yes	Yes	Yes	Yes
Region × Year fixed effect	Yes	Yes	Yes	Yes	Yes
First stage F		14.71	14.60	14.62	14.58

Notes: This table reports more estimates of impact of share of low-skilled immigrants on native teen fertility for the baseline model. Native teenage girls are aged from 14 to 18 who are not in labor force and enrolled in high school. Dependent variable is "Child", which equals to one if a native teenage girl living in a particular metropolitan area in a specific year has a child last year (age is less than one) in the household and zero otherwise. The key independent variable of interest is share of low-skilled immigrants. It is defined as amount of immigrants who are working age high school dropouts divided by working age (16 to 64) labor force. The variables age, Married, Black,Other race, Hispanic are all indicator variables. Standard errors, in brackets, are clustered at the city × year level. The First stage F statistic is reported using Sanderson-Windmeijer (SW) multivariate F test of excluded instruments F statistics. * indicates significance at the 0.05 level.

9.3 Appendix C: Probit model

Table 7: Impact of low-skilled immigrants on native teen fertility

	Dependent Variable: Gave Birth in Previous Year			
	OLS	OLS	OLS	IV
	(1)	(2)	(3)	(4)
Share of Low-skilled immigrants	–0.745*	–1.010*	–1.742*	–2.137*
	[0.190]	[0.208]	[0.415]	[0.277]
Age	0.265*	0.267*	0.270*	0.271*
	[0.006]	[0.006]	[0.006]	[0.001]
Married	1.071*	1.072*	1.075*	1.075*
	[0.044]	[0.044]	[0.044]	[0.006]
Black	0.627*	0.637*	0.660*	0.660*
	[0.019]	[0.019]	[0.020]	[0.004]
Other race	0.253*	0.221*	0.219*	0.220*
	[0.038]	[0.036]	[0.039]	[0.006]
Hispanic	0.391*	0.402*	0.404*	0.405*
	[0.030]	[0.030]	[0.031]	[0.005]
Constant	–7.015*	–7.011*	–7.189*	–7.182*
	[0.095]	[0.101]	[0.215]	[0.035]
N	457,539	457,539	457,539	457,539
R-Sq				
MSA fixed effect	No	No	Yes	Yes
Region × Year fixed effect	No	Yes	Yes	Yes
First stage F				14.58

Notes: This table reports the unscaled probit estimates of impact of share of low-skilled immigrants on native teen fertility for the baseline model. Native teenage girls are aged from 14 to 18 who are not in labor force and enrolled in high school. Dependent variable is "Child", which equals to one if a native teenage girl living in a particular metropolitan area in a specific year has a child last year (age is less than one) in the household and zero otherwise. The key independent variable of interest is share of low-skilled immigrants. It is defined as amount of immigrants who are working age high school dropouts divided by working age (16 to 64) labor force. The variables age, Married, Black,Other race, Hispanic are all indicator variables. Standard errors, in brackets, are clustered at the city × year level. * indicates significance at the 0.05 level.

9.4 Appendix D: Labor market conditions

In this section, I check the changes to the result if we directly control for local labor market conditions-mean wage and unemployment rate for local young workers. From Table 8, after adding the two conditions, the IV results (Column 2) is no longer significantly different from zero. However, the coefficients for wage and unemployment rate are not significant, revealing that it is not necessary to control for them directly. Girls whose mothers are high school dropouts are less likely to have a kid with the increase of immigrants in town than girls whose mothers are high school graduates.

Table 8: Robustness of Main Fertility Estimates to Adding Controls for Labor Market Conditions

	Dependent Variable: Gave Birth in Previous Year			
	(1)	(2)	(3)	(4)
	FE	IV	High-skilled	Low-skilled
Share of low-skilled immigrants	–0.034*	–0.042	–0.033	–0.141*
	[0.010]	[0.023]	[0.018]	[0.042]
Age	0.005*	0.005*	0.002*	0.005*
	[0.000]	[0.000]	[0.000]	[0.000]
Married	0.091*	0.091*	0.080*	0.210*
	[0.007]	[0.007]	[0.013]	[0.014]
Black	0.013*	0.013*	0.007*	0.009*
	[0.001]	[0.001]	[0.001]	[0.001]
Other race	0.004*	0.004*	0.002*	0.003*
	[0.001]	[0.001]	[0.001]	[0.001]
Hispanic	0.007*	0.007*	0.003*	0.005*
	[0.001]	[0.001]	[0.001]	[0.001]
Log mean wage for young workers (18 to 28)	–0.001	–0.001	–0.001	0.012*
	[0.002]	[0.003]	[0.002]	[0.005]
Unemployment rate for young workers (18 to 28)	0.011	0.016	0.017	0.059
	[0.014]	[0.020]	[0.013]	[0.032]
Constant	–0.068*	–0.071*	–0.029*	–0.104*
	[0.007]	[0.010]	[0.007]	[0.015]
N	457,539	457,539	144,449	179,829
R-Sq	0.022	0.022	0.016	0.061
MSA fixed effect	Yes	Yes	Yes	Yes
Region × Year fixed effect	Yes	Yes	Yes	Yes
First stage F		22.60	27.43	17.49

Notes: This table reports the estimates of impact of share of low-skilled immigrants on native teen fertility after adding the labor market condition variables: log mean wage and unemployment rate for young workers aged from 18 to 28 in each MSA. Native teenage girls are aged from 14 to 18 who are enrolled in high school. Dependent variable is "Child", which equals to one if a native teenage girl living in a particular metropolitan area in a specific year has a child last year (age is less than one) in the household and zero otherwise. The key independent variable of interest is share of low-skilled immigrants. It is defined as amount of immigrants who are working age high school dropouts divided by working age (16 to 64) labor force. The variables age, Married, Black,Other race, Hispanic are all indicator variables. Standard errors, in brackets, are clustered at the city × year level. Column 1 estimates the fixed effect model, while Column 2 focuses on IV regression. Column 3 focuses on girls whose mothers are high school graduates, while Column 4 focuses on those whose mothers are high school dropouts. * indicates significance at the 0.05 level.

9.5 Appendix E: Heterogeneous response: Labor force participation status

In this section, I look at the native teenage girls who are reported to be in the labor force. I restrict them to be enrolled in school.

Table 9 reports the results for this specification. After restricting the sample to those who are in the labor force (Column 3), the estimated coefficient is a positive number 0.109. The probability of having a child increases for the native teenage girls in the labor force. This is an interesting finding, but the potential reason for this positive impact is unclear. The decision to participate in labor force is endogenous. Teenage girls who are enrolled in school but already in labor force are either not capable of continuing studies or prefer work over schooling. They may also be the students who are from poor families and in need of money. As they may lack the opportunity to increase the ability to compete by avoiding teen fertility to increase human capital, the decreased opportunity cost of being a teenage mother becomes the main channel to influence their decisions. Another possibility is that girls who have babies are more likely to participate in the labor force.

Table 9: Heterogeneous Effects on Teen Fertility by Labor Force Participation Status

	Dependent Variable: Gave Birth in Previous Year			
	(1)	(2)	(3)	(4)
	In Labor force FE	Out of Labor force FE	In Labor force IV	Out of Labor force IV
Share of low-skilled immigrants	0.003	–0.030*	0.109*	–0.037*
	[0.017]	[0.007]	[0.043]	[0.017]
Age	0.002*	0.005*	0.002*	0.005*
	[0.000]	[0.000]	[0.000]	[0.000]
Married	0.060*	0.093*	0.060*	0.093*
	[0.006]	[0.007]	[0.006]	[0.007]
Black	0.021*	0.013*	0.021*	0.013*
	[0.001]	[0.001]	[0.001]	[0.001]
Other race	0.006*	0.004*	0.006*	0.004*
	[0.002]	[0.001]	[0.002]	[0.001]
Hispanic	0.009*	0.007*	0.009*	0.007*
	[0.001]	[0.001]	[0.001]	[0.001]
Constant	–0.016*	–0.070*	–0.018*	–0.069*
	[0.007]	[0.004]	[0.007]	[0.004]
N	137,900	457,539	137,900	457,539
R-Sq	0.017	0.022	0.017	0.022
MSA fixed effect	Yes	Yes	Yes	Yes
Region × Year fixed effect	Yes	Yes	Yes	Yes
First stage F			16.95	14.58

Notes: This table reports the estimates of impact of share of low-skilled immigrants on native teen fertility based on labor force participate status. Native teenage girls are aged from 14 to 18 who are enrolled in high school. Dependent variable is "Child", which equals to one if a native teenage girl living in a particular metropolitan area in a specific year has a child last year (age is less than one) in the household and zero otherwise. The key independent variable of interest is share of low-skilled immigrants. It is defined as amount of immigrants who are working age high school dropouts divided by working age (16 to 64) labor force. The variables age, Married, Black,Other race, Hispanic are all indicator variables. Standard errors, in brackets, are clustered at the city × year level. * indicates significance at the 0.05 level.