# Putting Maternity on Ice: The Impacts of Financial Deregulation on Fertility*

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**Abstract**

U.S. states deregulated their banking sectors in a staggered fashion from the 1970s to the 1990s, increasing efficiency through competition between banks and boosting economic growth within a state. We test if financial deregulation had any impacts on fertility. In updating our results with recent econometric literature accounting for difference in unit treatment timing, we find that our results are robust for the sample of observations prior to 1989 but not for the later sample. Women aged 20-44 saw a decrease of approximately 2-3% on average fertility rates post deregulation (using both state-level as well as individual-level data). Our results suggest that one important mechanism that could explain decreasing fertility is the increased opportunity costs to having children in a growing job market, especially for non-white and poorer households.

*This research was conducted with restricted access to Bureau of Labor Statistics (BLS) data. The views expressed here do not necessarily reflect the views of the BLS.

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# 1 Introduction

The COVID-19 pandemic renewed interest in declining fertility rates in the US, with articles written in the first two years of the pandemic highlighting its negative impact on fertility (AP, 2021; Tavernise, 2021; Vinopal, 2021). A report published by the National Center for Health Statistics at the start of May 2021 reported that the U.S. fertility rate dropped by 4% over the course of 2020 compared to 2019 levels (Hamilton, Martin and Osterman, 2021), and other reports are predicting that the drop seen by the end of the pandemic may be even larger (Kearney and Levine, 2020). Newer work has shown the decline in fertility over the last two years spread unevenly across states and socioeconomic groups, with older married women with higher education even experiencing an increase in births nationally (Adelman et al., 2023; Bailey, Currie and Schwandt, 2022).

A large decrease in fertility raises policy concerns about the sustainability of social welfare programs for the elderly that rely on contributions by a younger population. This is not the first time such questions have arisen in the U.S. The U.S. Total Fertility Rate (TFR) for women aged 15–44 currently stands at 1.7, much lower than the 'replacement rate' of 2.1, i.e. the the required TFR for a country to sustain its population (McPhillips, 2023).[1] The US fertility rate has been below replacement since 1971, and despite a slight boom in the early 2000s and the aforementioned evidence of a selective baby bump reversal during the pandemic for some sub-groups of women, the TFR has been consistently decreasing in America since 2007, and been a subject of widespread scrutiny (Bailey, Currie and Schwandt, 2022).

The 1960s saw a nationwide sharp decline in fertility after the baby boom of the 1950s. The decline continued into the 1970s when the TFR dropped below replacement rate. Several mechanisms have been studied to explain this decrease in fertility, such as a change in cultural values (Fernandez and Fogli, 2009), increasing economic opportunities for

[1] The TFR measures the hypothetical lifetime births per woman, based on the age-specific birth rate in a given year.

women (Willis, 1973; Butz and Ward, 1979), and the increased control over their own fertility for women with the introduction of oral contraception (Goldin and Katz, 2002) and legalization of abortion following Roe v. Wade (Levine et al., 1999).

In this chapter, we test if state-level banking deregulation (that began around this same time) had any significant impacts on fertility. Between 1960 to 1999, states in the U.S. began lifting restrictions on banks, allowing them to expand their branches within and across states, increasing competition between banks (Amel and Liang, 1992) and leading to greater availability of credit for previously excluded groups (Jayaratne and Strahan, 1998; Demyanyk, 2008; Beck, Levine and Levkov, 2010).

At first glance, the impact of increased access to credit on fertility is ambiguous. If we think of children as normal goods, and increased access to credit and economic growth as raising household incomes, then we should expect fertility rates to rise in deregulated states. On the other hand, if the increased credit and economic growth leads to better labor market opportunities, then the opportunity cost of having children could rise significantly, and households might want to decrease their fertility.

We exploit the staggered timing of banking deregulation across states to estimate impacts on fertility using a difference-in-differences approach. Using both state-level data on fertility rates from Bailey et al. (2016), as well as individual level data from the March supplement of the Census Population Survey (Flood et al., 2020), we find that the deregulation of a state leads to an average decrease in the fertility of women aged 20-44 by about 4.3% at the state level and by 6.5% at the individual level. Fertility declines gradually in the years after deregulation in a state, with the strongest impacts felt two years post deregulation onward.

New econonometric literature suggests that classic differences in differences can imperfectly estimate two-way fixed effects (TWFE) when there is a difference in the timing of units being treated (Sun and Abraham, 2021; Goodman-Bacon, 2021; Callaway and Sant'Anna, 2021). We find upon re-estimating our main tables using specifications robust to staggered timing of treatment devised by Borusyak, Jaravel and Spiess (2023), our results are no longer statistically significant and decrease substantially in magnitude. However, when we break down our sample into before 1989 (when three-quarters of our 47 states had deregulated) and after, we find that our classic TWFE estimates are similar in magnitude to the TWFE estimates robust to timing of treatment for the sample of years prior to 1989, and noisier and more disparate in the sample in the years including 1989 and after at both the state and the individual-levels. Since we look at a sample where states deregulate over a long period of time, it is natural to expect that impacts might be more significant for the earlier states in our sample.[2] This is confirmed when we plot our fertility decline impacts separately by year and find estimates after 1988 to be extremely noisy in both our state and individual data samples in Appendix Figures A.1 and A.2 respectively. Thus, for the rest of the analysis, we restrict our sample to years prior to 1989. For these earlier years, we find that the impacts of state deregulation on fertility range from declines of 1.7% in state-level data to 2.7% in the individual-level data.

When looking at possible mechanisms for fertility decline, we find suggestive evidence that the declines in fertility were largest for non-white women and poorer households. This suggests that one of the main drivers of the decrease in fertility could be an increase in labor market opportunities for previously excluded groups, raising their opportunity cost to having children. In line with these findings, we also see that women have fewer total children, and find statistically insignificant impacts of state deregulation marginally decreasing marriage rates and increasing divorce rates.

Section 2 provides details on the bank deregulation and offers some motivation on why we could expect to see impacts of bank deregulation on fertility. We explain our data in Section 3 and outline our difference-in-differences methodology in Section 4. Our results are discussed in Section 5 and we conclude with future directions for this chapter in Section 6.

[2]States deregulated over a 39 year period as seen in Table 1. The first states to deregulate did so in 1960, whereas the last to deregulate was Iowa in 1999.

# 2 Background and Motivation

## 2.1 Bank Deregulation

Prior to the 1970s, banking was highly regulated in the U.S. Most states had restrictions on the number of branches that banks were allowed to operate both within and across states, with some states only allowing one branch per state (referred to as 'unit banking'). This allowed for the formation of local banking monopolies and restricted individuals from accessing credit in 'under-banked' regions.

However, from the 1960s to 1990s, states began deregulating their banking sectors in a staggered fashion (see Table 1 and Figures 1 and 2). The last states to deregulate their banks did so after the 1994 passage of the Riegle-Neal Interstate Banking and Branching Efficiency Act. In deregulated states, banks were allowed to expand both across and within states, either by opening new branches (called '*de novo* branching') or via mergers and acquisitions with other local institutions.[3]

As a consequence of bank reform, there was significant new entry into local banking markets (Amel and Liang, 1992) which improved bank efficiency by increasing competition between banks (Jayaratne and Strahan, 1996, 1998). Deregulation-induced competition between banks and the opening of new branches in remote areas of states led to higher lending and allowed previously excluded households access (Dick and Lehnert, 2010).

Intra-state banking deregulation significantly increased economic dynamism within the local state economies. Previous literature has found highly positive and significant impacts of banking deregulation on various economic outcomes, such as economic growth

[3] Previous literature on banking reform has found that the removal of intra-state banking restrictions were far more significant in changing the banking structure and real economy (Jayaratne and Strahan, 1996; Beck, Levine and Levkov, 2010). Thus, even though some states may have had their intra-state and inter-state restrictions lifted in different years, we only focus on the year of intra-state reform in our analysis. Recomputing our results including both types of reform directly shows us that inter-state banking reforms did not significantly impact fertility rates.

(Jayaratne and Strahan, 1996), entrepreneurship (Black and Strahan, 2002; Kerr and Nanda, 2009), small business lending (Rice and Strahan, 2010; Demyanyk, Ostergaard and Sørensen, 2007), and boosting local business cycles (Morgan, Rime and Strahan, 2004). States enacting banking deregulation also saw increases in college enrollment rates (Sun and Yannelis, 2016), as well as decreases in income inequality (Beck, Levine and Levkov, 2010) and the gender gap in labor force participation (Popov and Zaharia, 2019).

## 2.2 How Could the Bank Reforms Impact Fertility

As discussed, bank deregulation increased business dynamism and job availability within states (Kerr and Nanda, 2009). In particular, the banking reforms allowed lower income households and marginalized groups to have increased access to credit, lowering income inequality (Beck, Levine and Levkov, 2010) as well as racial and gender gaps in labor force participation (Levine et al., 2012; Popov and Zaharia, 2019). Thus, the opportunity cost of being out of the labor force, either due to childbirth or childcare significantly increased, and women (or households) could choose to delay their fertility. This would be particularly true for groups that saw the largest returns to bank deregulation in the labor market, such as non-white and lower income households. Access to credit (and related labor market opportunities) could also raise the outside options of women and see them decrease marriage rates and initiate divorces because they are no longer dependent on their families, thus reducing their fertility.

On the other hand, if rising labor market opportunities meant that household incomes rose, and children are considered normal good, then this could lead to an increase in birth rates.

Bank deregulation increased house prices (Favara and Imbs, 2015), and thus home equity for existing homeowners. Dettling and Kearney (2014) and Lovenheim and Mumford (2013) show that fertility often increases with housing wealth, and this means we could see homeowners having more children in deregulated states. At the same time, if housing prices increase and housing stock is positively correlated with fertility, we could find that renting families see a decline in fertility since their path to homeowner-ship gets more expensive.

# 3 Data

We use two different data sets to explore the effect of bank deregulation on fertility rates at the state level and at the individual level.[4]

First, for our state-level analysis, we use Vital Statistics data created by Bailey et al. (2016).[5] They provide fertility data by county and race from 1915 to 2007. We aggregate their data up to state level to create a state-year panel and use the observations from 1970-2000. We define the fertility rate as the number of births in a state per 1000 women aged 20-44.

Second, we use the Current Population Survey (CPS) for individual-level data from the March Supplement (ASEC) from 1977–2000 (Flood et al., 2020).[6] We are also able to use the CPS data to control for educational attainment, race, age, and state of residence, as well test for heterogeneity in results along other individual and household characteristics.

Our main independent variable is created using the data on year of bank deregulation by state from Beck, Levine and Levkov (2010) and Kroszner and Strahan (1999). Following other literature on bank deregulation, Delaware and South Dakota are are not included in our analysis because laws in these states facilitated the growth of credit card industry, changing the structure of their banking systems. We also exclude Alaska, Hawaii, Puerto Rico and other territories, but do include D.C. A full list of all 47 states in our

[4]We had also hoped to use the National Longitudinal Survey of Youth 1979 (NLSY) (Bureau of Labor Statistics, 2019) from 1979-2000 to augment our individual-level results and check for mechanisms related to credit access. However, we did not find time-varying measures of credit access or banking in the time period we wanted to study (i.e. 1979 to 1989). Further, the small sample size of our restricted sample meant that we lost statistical power to draw meaningful conclusions from results in the NLSY79 data. Thus, we do not report the results from the NLSY79 in this chapter.

[5]available at https://www.openicpsr.org/openicpsr/project/100229/version/V4/view

[6]We have to limit the CPS data to start in 1977 because only nine states are well-defined between 1968-1976. Other papers that look at the impact of bank deregulation on individual outcomes using CPS data also make the same sample restriction (Beck, Levine and Levkov, 2010; Popov and Zaharia, 2019).

analysis and the years they underwent bank reform are detailed in Table 1.

Annual state-level income, population and employment data, which we use as contemporaneous state-level controls, are provided by the Bureau of Economic Analysis (BEA).[7]

# 4 Empirical Strategy

The staggered timing of banking deregulation across states leads us to a difference-in-differences methodology for our empirical strategy. Jayaratne and Strahan (1996) argue that states did not deregulate their banking industry in the anticipation of future growth prospects or in response to local economic conditions. Kroszner and Strahan (1999) show that national technological innovations such as the invention of automatic teller machines (ATMs), introduction of check-able money market mutual funds, and improvements in communications technology reduced the monopoly power of local banks, and weakened their ability to fight against deregulation. They show deregulation occurred later in states where politically powerful groups considered competition from large banks as a potential threat to their interests. Using a Weibull hazard model to predict the years remaining to deregulation, we establish in Tables A.1 and A.2 that fertility rates before deregulation have no impact on a state's time to intrastate deregulation, suggesting that the deregulation at the state level is exogenous to fertility rates, and driven by political economy factors and state banking sector characteristics listed by Kroszner and Strahan (1999).

While this provides some support for the plausible exogeneity of the timing of banking reforms, for our difference-in-differences strategy to be valid, the identifying assumption is that states that deregulated would have had their trajectory of fertility rates move in parallel with the states that did not deregulate, in the absence of bank deregulation. While the counterfactual parallel trends assumption cannot be tested, we can test for parallel pre-trends in fertility between deregulated and non-deregulated states. To do so, we

[7] available at https://apps.bea.gov/regional/downloadzip.cfm

plot the coefficient estimates and 95% confidence intervals from the following equation:

$$Y_{s,t} = \beta_0 + \beta_1 D_{s,t}^{-10} + \beta_2 D_{s,t}^{-9} + ... + \beta_{26} D_{s,t}^{+15} + \delta_s + \phi_t + \epsilon_{s,t} \tag{1}$$

where $Y_{s,t}$ is the state $s$'s fertility rate in year $t$, defined as the number of births per 1000 women aged 20-44. $D_{s,t}^{-\tau}$ equals one for the state $s$ in the $\tau^{th}$ year before deregulation and zero otherwise. $D_{s,t}^{+\tau}$ is also defined analogously. The coefficient on the dummy variable for the year prior to deregulation is normalized at zero. Figure 3 plots the $\beta_\tau$ coefficients to show evidence of zero pre-trends, i.e. that the coefficients on the deregulation dummy variables are insignificantly different from zero for all years before deregulation, and they show a sharp gradual decrease in the years after deregulation.[8]

Thus, we move forward with our difference-in-differences strategy. Our first empirical specification uses state-level data and is as follows:

$$Y_{s,t} = \beta_0 + \beta_1 D_{s,t} + \mathbf{X}_{s,t}\Gamma + \delta_s + \phi_t + \epsilon_{s,t} \tag{2}$$

where $Y_{s,t}$ measures the fertility rate in state $s$ at time $t$, measured as the number of births per thousand women of childbearing age (ages 20–44). $D_{s,t}$ is a dummy variable that equals one in the years after state $s$ deregulates and zero otherwise. $\mathbf{X}_{s,t}$ is a vector of contemporaneous controls at the state level, which includes the log of population, the proportion of the population that is employed, and the proportion of population that is white. The coefficient of interest is $\beta_1$, which measures the impact of branch deregulation on the fertility rate, averaged across all the years post deregulation.

We also include state fixed effects, $\delta_s$ and time fixed effects, $\phi_t$. State fixed effects control for time-invariant unobserved state characteristics that might affect fertility rates for reasons unrelated to banking market structure. The time fixed effects control for the

[8] When we include state contemporaneous characteristics in this estimation, our pre-trends become even flatter and closer to zero.

secular trends in fertility rates at the national level and for any national-level cyclical variation in fertility rates. We do not add linear interactions between the year dummies and indicators for different states, since we do not see any evidence of pre-trends in Figure 3.[9] We report standard errors clustered by state.

Next, we move on to our difference-in-differences using individual-level data from the CPS. We use the following specification:

$$Y_{i,s,t} = \beta_0 + \beta_1 D_{s,t} + \mathbf{X}_{s,t}\Gamma + \mathbf{Z}_{i,s,t}\Psi + \delta_s + \phi_t + \epsilon_{i,s,t} \quad (3)$$

where $Y_{s,t}$ measures whether a woman $i$, aged between 20–44 in state $s$ in year $t$ has given birth within the last year.[10] $D_{s,t}$ is a dummy variable that equals one in the years after state $s$ deregulates and zero otherwise. $\mathbf{Z}_{i,s,t}$ is a vector of individual controls for a woman $i$ aged between 20-44 in state $s$ in year $t$, including race, whether a woman has high school (HS) education or higher, and a 4th degree polynomial in age. The coefficient of interest is again $\beta_1$, which now measures the impact of bank deregulation on the likelihood that a woman aged 20-44 has given birth in the last year, averaged across all the years post deregulation in a state.

Again, we include the vector of contemporaneous state-level controls $\mathbf{X}_{s,t}$, state fixed effects, $\delta_s$ and time fixed effects, $\phi_t$ as in the previous specification. We report standard errors clustered by state and year.

# 5 Results

## 5.1 Preliminary Results

We first report estimates from equation 2 using our full sample of state-level observations in Table 2. Our preferred final estimates in column (3) include state and year fixed effects

[9] When re-doing our main tables with a linear state time trend, our results stay consistent.

[10] We leave out teenage births here since they follow a very different evolution in the US (Hamilton, Martin and Osterman, 2021).

as well as state-level controls see the average impact of bank reform on all years post deregulation to be a decrease in the state fertility rate of about 4.32% (a decline of 3.08 births per 1000 on a mean fertility rate of 71.34 births per 1000 women aged 20–44). The magnitude of the impacts do not change significantly before and after including state contemporaneous controls between columns (2) and (3) of Panel A.

Similar estimates from equation 3 using our full sample of individual-level observations from the CPS are reported in Panel A of Table 3. According to our preferred specification in column (4) (which includes state and year fixed effects as well as state-level and individual-level contemporaneous controls), women aged 20–44 in states that undergo bank reform are 0.44 percentage points less likely to give birth in the past year, which is a decrease of 6.57% on the mean of a 0.07. Again, the magnitude of the impact does not change much upon including state or individual contemporaneous controls between columns (2), (3) and (4).

## 5.2 Robustness to Staggered Timing of Treatment

Recent econonometric literature points out the flaws in estimating a two-way fixed effects (TWFE) model in contexts with differential treatment timing across units (Sun and Abraham, 2021; Goodman-Bacon, 2021; Callaway and Sant'Anna, 2021). Since in our context we do have different states deregulating at different times, our classic two-way difference-in-differences estimator using in the previous section could over-weight the impacts from the states that deregulated earlier in our sample.

To correct for this, we re-estimate our main state-level results and our main individual level fertility results using both the classic TWFE model as well as differences-in-differences robust to staggered treatment timing devised by Borusyak, Jaravel and Spiess (2023).[11] The results are presented side-by-side in Panel A of Appendix Tables A.3 and A.4. Unfortunately, we find that our results are not robust to this new estimator when

[11] The Github code for this estimator is available at https://github.com/borusyak/did_imputation or can be installed on Stata via the command "ssc install did_imputation".

using state and year fixed effects between columns (2) and (4) in Panel A of both Tables. The magnitudes and statistical significance of fertility declines due to state deregulation sharply shrink when using TWFE estimators robust to timing of treatment.

We think that this might be because the impacts on fertility are driven by early states in our sample, especially since we cover such a wide time horizon in our analysis. To check this, we plot our treatment coefficients separately by year for both our state-level and our individual-level estimates using the CPS in Appendix Figures A.1 and A.2 respectively. We see that the estimates for impacts of state deregulation on fertility become noisier and more positive halfway through the time period we measure. The year when 75% of all our sample states had deregulated is 1989, so we choose to split our sample and present results using both classical TWFE and Robust TWFE across these two periods in Panels B and C of Appendix Tables A.3 and A.4.[12]

The Borusyak, Jaravel and Spiess (2023) estimator calculates similar magnitudes of impacts (although not exactly the same) of deregulation on state-level fertility before 1989 in columns (2) and (4) of Panel B of Appendix Table A.3. This translates to a decline of 4.8-5.5% on state-level fertility after a state deregulates (or a decline of about 3.5-4.1 births per 1000 in a state for all women aged 20-44, on a base of 74.03 births per 1000). However, when looking at the data between 1989-2000, the impacts of state deregulation on fertility are no longer statistically significant at the 10% level using either the classical or the robust TWFE estimators. Additionally, they estimate impacts of opposing magnitudes, which suggests that these estimates are less trustworthy and perhaps indicative of noise rather than a true impact on fertility.

When we repeat the exercise with our individual-level CPS data in Appendix Table A.4, we find similar results. In Panel B, when looking at data from 1977 until before 1989, we find similar (but not identical) magnitudes of the impact of state deregulation on

[12] We wanted to select the most recent relevant year in our sample to divide the data. The year where a median number of banks had deregulated would be 1985. Checking the figures A.1 and A.2, we have chosen for now our split year to be 1989. Results are not very different for the early batch of states if we choose 1985 as our splitting year.

fertility of 3.7-4.7% (or a decline of 0.3 percentage points in the probability of having given birth in the last year). The estimates in column (2) and (4) are statistically significantly different from each other when looking at data in 1989 and beyond in Panel C, and the estimates using the robust TWFE estimator shrinks to nearly zero in column (4).

Given these findings for the rest of the analysis, we use the classical TWFE estimators but restrict our sample to observations before 1989. Therefore, our main results come from column (3) of Panel B of Tables 2 and 3. The impact of a state deregulating is about 1.7% on state-level fertility (a decline of 1.25 births per 1000 women aged 20-44 from a base of 74 births per 1000) and 2.7% on individual-level fertility using CPS data (a decline of 0.19 percentage points in the likelihood of having given birth in the past year).

## 5.3 Dynamic Impacts

Since fertility is a variable where we expect to see lagged impacts, we re-estimate our difference-in-differences equation in 2 as a dynamic equation (Bertrand and Mullainathan, 2003), by replacing our binary dummy with 4 separate binary dummies for bank reform: the first equal to one for up to two years prior to deregulation, the next equal to one only for the year of deregulation, the third equal to one only for the year after deregulation and the last equal to one for all years two onward after deregulation. The results are reported in Table 4. As expected, in column (3) after accounting for state and year fixed effects as well as state controls, we see that the entire decline in state fertility rates is driven by impacts in the years after bank deregulation. There are statistically insignificant declines in fertility in the year after deregulation and two years after deregulation but we see our average impacts of 1.7% in Table 2 come almost entirely from an average decrease of 3.78% in the post two-year period after bank reforms are enacted, averaged with insignificant and smaller magnitude of decreases in the two immediate years after bank reform is enacted. The impacts in year of and years prior to bank reform are positive and statistically insignificant.

Once again, we re-estimate our difference-in-differences equation in 3 as a dynamic equation, by replacing our binary dummy with the same 4 binary dummies for bank reform as above, with our individual data using CPS. The dynamic results are reported in Table 5. Once again, the largest declines in fertility come in the years after bank deregulation. We see that women are 7.88% less likely to give birth within the last year two years after bank deregulation, and 7.02% less likely to give birth within the past year after more than two years post bank deregulation. The impacts in the years before, year of and year after bank deregulation are statistically insignificant and not statistically distinguishable from each other.

## 5.4 Possible Mechanisms

### 5.4.1 Outside Options for Women

As discussed in section 2, bank deregulation significantly increased economic growth within a state. In particular, it contributed to job growth, an uptick in entrepreneurship, and the decrease in the gender gap in labor force participation. This could have offered women more opportunities in the labor force, which, even if not taken up, could increase their bargaining position within the household. As a consequence of increased demand for labor, women could want to now delay their fertility since the opportunity cost of having children (and subsequent care if seen as time away from the labor force) rose significantly.

We test this in two different ways. Popov and Zaharia (2019) show how the gender gap in labor force participation falls in deregulated states due to a combination of multiple channels: an increase in net job creation (with a particular expansion in service sector jobs) and jobs requiring female-specific skills. We test whether the decrease in fertility is larger in magnitude for those women who are in the labor force, in service industries or in female-dominated industries.[13] The results are shown in Figure A.3. We can see that

[13] We define female-dominated industries in a similar way to Popov and Zaharia (2019), assigning industries a value of 1 ("female dominated") if the proportion of women in that industry are more than the

while these sub-populations do see a decrease in their likelihood of giving birth in the last year that is significantly different from zero, we cannot say that they are distinct from the full sample impact on women. Therefore, women who took up new opportunities in the labor market as a consequence of state banking reform may not have been the sole drivers of a decrease in fertility rates in the state. In the same Figure A.3, we also plot the impact on individual fertility for women who have some college education and those who are self-employed since these are also groups that saw an increase in their numbers as a result of bank deregulation. Again, we find that the impacts on these groups are significantly negative, but not distinguishable from the full sample of women. However, it could be that even women who do not enter the labor force, self-employ or enroll in college see their bargaining power within their households increase due to the mere existence of these outside options, allowing them to delay fertility.

One way we can test if the decline in fertility comes from a change in the relative economic power of women is to check if access to fertility allowed them to delay marriages or initiate divorces (thereby decreasing total fertility for women) since they are no longer tied to husbands for credit. We show the results of estimating a difference-in-differences regression as in 3, for dependent variables related to marriage and fertility in Table 6. For most of the variables, we do see results in the expected directions but the magnitudes are economically small and they are not statistically significant. Women decrease their likelihood of being married by 0.93% in column (1), and see an analogous increase in the likelihood of being divorced in column (2) by 3.46% on average in the years after a state deregulates their banking sector albeit both magnitudes are not statistically significant. In column (3), we see the impact on the age at which women have their first child increasing by a statistically insignificant 0.14%, and the total number of children a woman has decreases by 2.11% in column (4) after bank deregulation. The decline in total fertility is statistically significant. The decrease in likelihood of giving birth in the last year is lower

average share of women across all industries in 1977.

for married women in column (5) at 1% than for our full sample in column (5) of Table 3 at 2.7%, but once again this estimate is not statistically significant. From these results, we find at best suggestive evidence of fertility declines being caused by changes in the labor market opportunities or bargaining power of women in households, we do not have the statistical power to conclude that this is an important driver of fertility decline.

#### 5.4.2 Access to Credit for Previously Excluded Groups

Bank deregulation also increased economic growth by specifically boosting incomes and job opportunities for groups marginalized by race or income, as well as extending credit to these groups who may have been previously excluded by the banking industry (Demyanyk, 2008; Beck, Levine and Levkov, 2010; Levine et al., 2012).

As a result, these households may have increased their labor force participation and therefore decreased their fertility. We show the impacts on individual fertility by race and income in Table 7. The declines in fertility for white women in Panel A are almost entirely driven by point estimates of the decline in fertility for women in the lowest quartile of the income distribution in column (1), with fertility declining by 6.5% after a state deregulates for low-income white women. Non-white women in Panel B on the other hand, see fertility declines across almost all quartiles of income, and non-white women in the lowest income quartile experience fertility declines five times as large as those experienced by white women in the lowest income quartile, of 30.88% post state deregulation. However, once again none of our impacts are statistically significant.

#### 5.4.3 Housing Prices

Bank deregulation also had the effect of increasing housing prices in deregulated states (Favara and Imbs, 2015). This has the possibility of going in two directions. While homeowners would have seen an increase in their housing equity, which in previous literature has predicted to correlate positively with fertility Dettling and Kearney (2014), renters would have seen their barriers to home-ownership rise, thereby perhaps decreasing their fertility.

When we compute the impact of bank reform on the likelihood of giving birth within the last year separately for homeowners and non homeowners in Table 8, we see that the likelihoods decrease for both the groups in columns (1) and (2), but the negative impact on fertility is much larger in magnitude (and comparable to our full sample results) for renters with a decrease of 4.6% in their fertility after state deregulation. As before, the lack of statistical significance in our impacts implies that we cannot conclude that housing prices are an important driver of the fertility decline. The statistical insignificance of all the estimates further lend doubt to their credibility when exploring our potential mechanisms and we want to be cautious about inferences we make from this entire Section 5.4.

# 6 Conclusion

Thus, we find that the deregulation of state banking sectors led to a decline in fertility for women in deregulated states of 1.7-2.7% across different state and individual-level datasets in the years between 1970 and 1988. The size of the decline we see in fertility represents a meaningful magnitude, although it is smaller than the 4% decline measured in fertility as a consequence of state abortion laws (Levine et al., 1999), and the 9-11% decline in fertility measured as a result of the Great Recession (Cherlin et al., 2013).

The decline in fertility is driven by the states we see deregulate at the beginning of our sample. Results for declines in fertility after 1989 are not robust to alternate difference-in-differences methodology cited in new econometric literature that corrects for staggered treatment timing.

In testing for possible mechanisms, we find at best suggestive evidence of the fertility declines coming through increases in job market opportunities for women, and non-white and poorer families, which is consistent with previous literature on bank deregulation improving credit access and labor market outcomes for marginalized groups (Demyanyk, 2008; Beck, Levine and Levkov, 2010; Levine et al., 2012). We also find limited suggestive evidence that the change in fertility could be attributed to increasing housing prices as a consequence of bank deregulation (Dettling and Kearney, 2014; Favara and Imbs, 2015). For all our mechanisms, we lack statistical power to conclusively estimate the driving channels behind the decreased fertility.

Our results highlight that outside economic forces like state banking regulations, which seem disparate to household formation and fertility decisions, could still have economically meaningful and significant impacts on such outcomes. In this chapter, we find a small but statistically significant decline in fertility rates of women as a result of banking deregulation prior to 1989, which highlights state-wide differences in fertility at a time when the national fertility rate was fairly stagnant. Thus, in examining the declining U.S. fertility rate, it is important to understand the mechanisms through which fertility behavior within households can evolve in response to the outside labor market opportunities and monetary policy effects on local economies.

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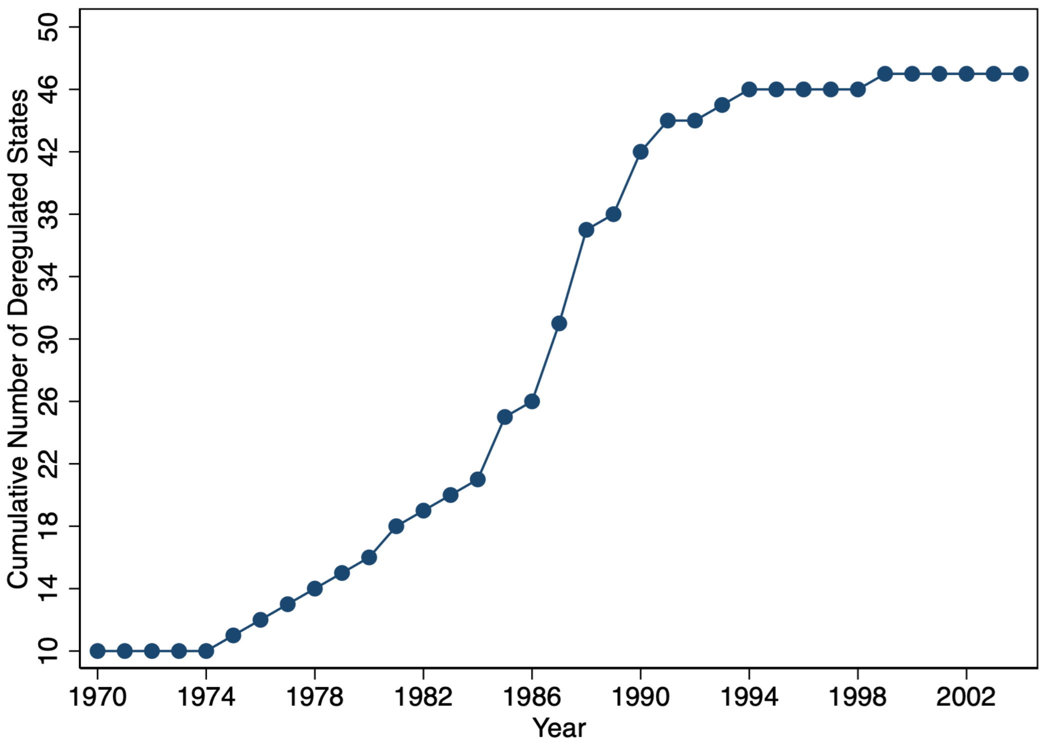
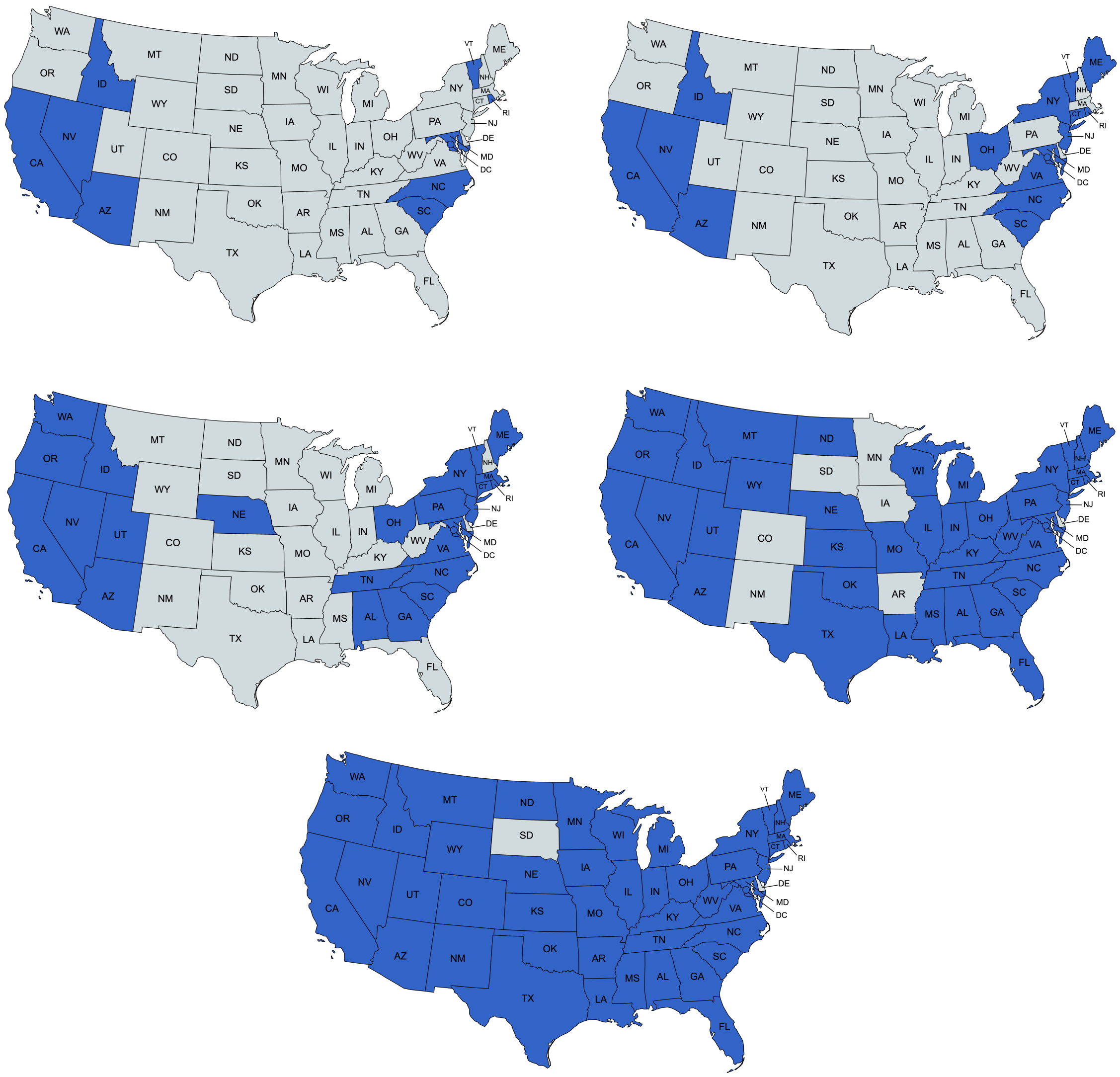
# Figures

**Figure 1: Number of States Deregulating their Banking Sector, by Year**



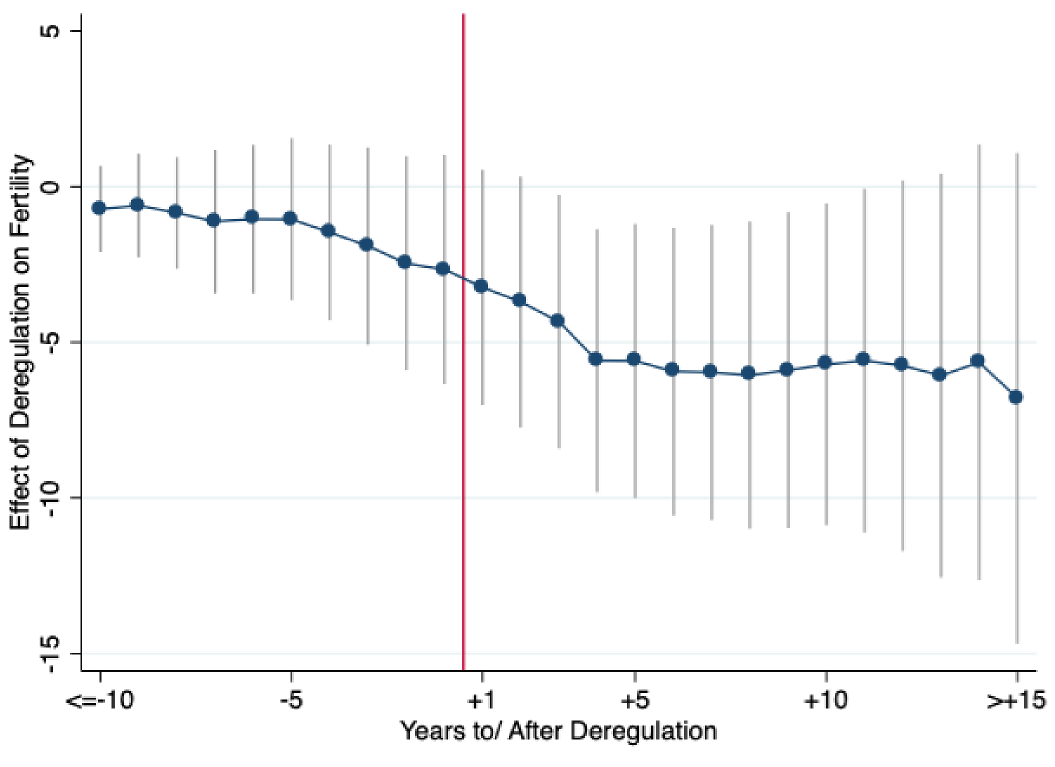

Notes: Our state-level data starts in 1970, by which time 10 states had already deregulated their banking sectors. 9 had deregulated in the 1960s, and VT in 1970 (see Table 1 for all state years). By the end of our sample in 2000, all states had deregulated. We do not include in our analysis SD and DE due to their unique banking structure, as well as AK and HI. We do include DC, which gives us a total of 47 states in our sample.

# Figure 2: U.S. States Deregulated as of 1970, 1980, 1985, 1990 and 2000.



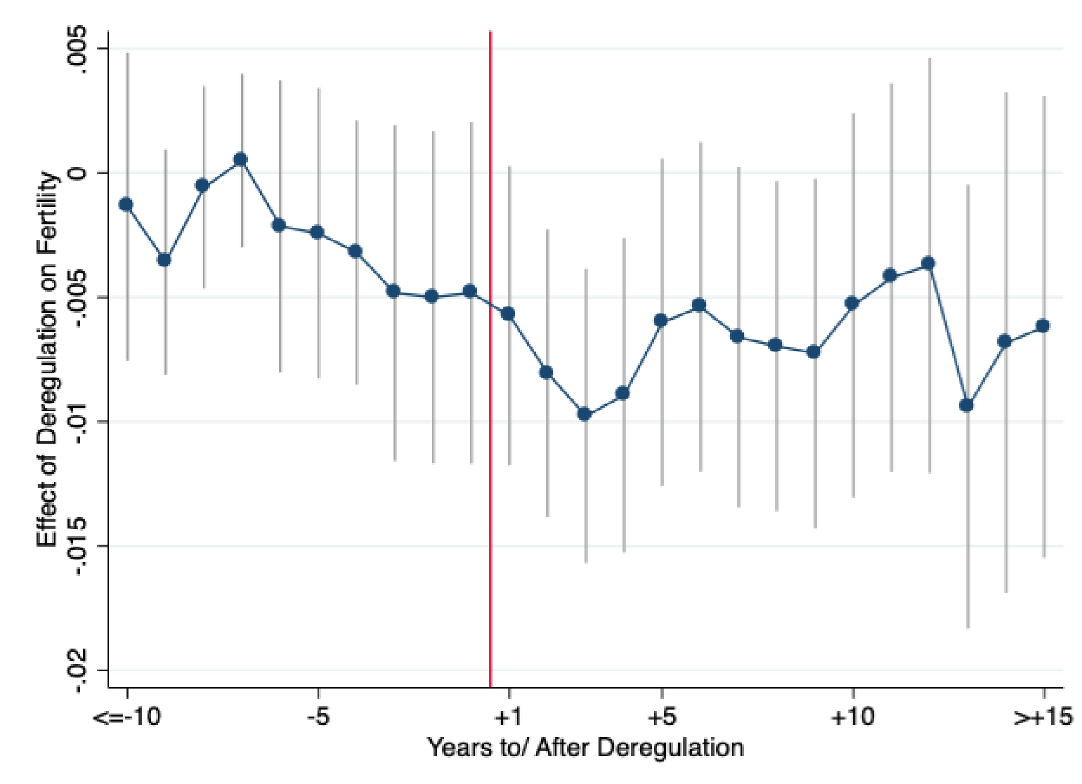

Notes: We show a geographic display of states across the US that were deregulated in blue (from the top left) by 1970, 1980, 1985, 1990 and 2000 (see Table 1 for all state years of deregulation). By the end of our sample in 2000, all states had deregulated. We do not include in our analysis SD and DE due to their unique banking structure, as well as AK and HI. We do include DC, which gives us a total of 47 states in our sample.

## Figure 3: Dynamic Impacts of Banking Deregulation on State Fertility Rate, by Year




Notes: We show the coefficients of a difference-in-differences equation as in equation 2, but where we allow our binary dummy for deregulation to vary by year and include state controls: PCI growth, log population, fraction of population employed and fraction of population white. We limit years prior to deregulation to 15 and years after to 10, so the confidence intervals for the farthest lags (or leads) seem tighter since they include those many lags (or leads) and beyond. Specifically, we show the $\beta$s from the equation $Y_{s,t} = \beta_0 + \sum_{j=-10}^{15} \beta_j D_{s,t}^{j} + \delta_s + \mathbf{X}_{s,t}\Gamma + \phi_t + \epsilon_{s,t}$

**Figure 4: Dynamic Impacts of Banking Deregulation on Individual Fertility Rate, by Year (Using CPS)**




Notes: We show the coefficients of a difference-in-differences equation as in equation 2, but where we allow our binary dummy for deregulation to vary by year and include state controls: PCI growth, log population, fraction of population employed and fraction of population white; and individual controls: race, HS or more education, log of household income and a fourth degree polynomial in age. We limit years prior to deregulation to 15 and years after to 10, so the confidence intervals for the farthest lags (or leads) seem tighter since they include those many lags (or leads) and beyond. Specifically, we show the $\beta$s from the equation $Y_{i,s,t} = \beta_0 + \sum_{j=-10}^{15} \beta_j D_{i,s,t}^{j} + \mathbf{X}_{s,t}\Gamma + \mathbf{Z}_{i,s,t}\Psi + \delta_s + \phi_t + \epsilon_{i,s,t}$

# 7 Tables

**Table 1: Year of Intra-State Bank Deregulation For Every State**

| State | Year Deregulated | State | Year Deregulated |
|---|---|---|---|
| Alabama | 1981 | Nebraska | 1985 |
| Arizona | 1960 | Nevada | 1960 |
| Arkansas | 1994 | New Hampshire | 1987 |
| California | 1960 | New Jersey | 1977 |
| Colorado | 1991 | New Mexico | 1991 |
| Connecticut | 1980 | New York | 1976 |
| District of Columbia | 1960 | North Carolina | 1960 |
| Florida | 1988 | North Dakota | 1987 |
| Georgia | 1983 | Ohio | 1979 |
| Idaho | 1960 | Oklahoma | 1988 |
| Illinois | 1988 | Oregon | 1985 |
| Indiana | 1989 | Pennsylvania | 1982 |
| Iowa | 1999 | Rhode Island | 1960 |
| Kansas | 1987 | South Carolina | 1960 |
| Kentucky | 1990 | Tennessee | 1985 |
| Louisiana | 1988 | Texas | 1988 |
| Maine | 1975 | Utah | 1981 |
| Maryland | 1960 | Vermont | 1970 |
| Massachusetts | 1984 | Virginia | 1978 |
| Michigan | 1987 | Washington | 1985 |
| Minnesota | 1993 | West Virginia | 1987 |
| Mississippi | 1986 | Wisconsin | 1990 |
| Missouri | 1990 | Wyoming | 1988 |
| Montana | 1990 | | |

## Table 2: Impact of Bank Reform on State-Level Fertility

| | (1) | (2) | (3) |
|---|---|---|---|
| **Panel A: Full Sample** | | | |
| Bank Reform | -6.3577*** | -3.6512** | -3.0786*** |
| | (2.3231) | (1.3823) | (1.0746) |
| Mean Dependent Var. | 71.34 | 71.34 | 71.34 |
| SD Dependent Var. | (14.63) | (14.63) | (14.63) |
| N | 1,457 | 1,457 | 1,457 |
| $R^2$ | 0.05 | 0.89 | 0.92 |
| **Panel B: 1970-1989** | | | |
| Bank Reform | -3.8248 | -3.5307** | -1.2502 |
| | (3.5405) | (1.5625) | (0.8188) |
| Mean Dependent Var. | 74.09 | 74.09 | 74.09 |
| SD Dependent Var. | (15.53) | (15.53) | (15.53) |
| N | 893 | 893 | 893 |
| $R^2$ | 0.01 | 0.91 | 0.96 |
| State and Year FE | | ✓ | ✓ |
| State-Level Controls | | | ✓ |

Notes: Coefficients from a diff-in-diff regression of the fertility rate on banking reform. Robust standard errors clustered at state level in parentheses.

## Table 3: Impact of Bank Reform on Individual-Level Fertility

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| **Panel A: Full Sample** | | | | |
| Bank Reform | -0.0071*** | -0.0056*** | -0.0049*** | -0.0044*** |
| | (0.0015) | (0.0014) | (0.0013) | (0.0012) |
| Mean Dependent Var. | 0.067 | 0.067 | 0.067 | 0.067 |
| SD Dependent Var. | (0.25) | (0.25) | (0.25) | (0.25) |
| N | 681,017 | 681,017 | 681,017 | 681,017 |
| $R^2$ | 0.00 | 0.00 | 0.00 | 0.02 |
| **Panel B: 1977-1989** | | | | |
| Bank Reform | -0.0057** | -0.0033 | -0.0026 | -0.0019 |
| | (0.0020) | (0.0023) | (0.0023) | (0.0023) |
| Mean Dependent Var. | 0.0698 | 0.0698 | 0.0698 | 0.0698 |
| SD Dependent Var. | (0.2548) | (0.2548) | (0.2548) | (0.2548) |
| State and Year FE | | ✓ | ✓ | ✓ |
| | ✓ | ✓ | ✓ | |
| State-Level Controls | | | ✓ | ✓ |
| | | ✓ | ✓ | |
| Ind.-Level Controls | | | | ✓ |
| | | | ✓ | |

Notes: Coefficients from a diff-in-diff regression of the dependent variable of giving birth within the last year on banking reform. Robust standard errors clustered at state year level in parentheses. State-Level Controls in columns (4) and (5) include log population, percent white and percent employed in state. Individual Controls in column (5) include race, HS or college education, and a 4th degree polynomial in age.

## Table 4: Dynamic Impacts of Bank Reform on Fertility (State-Level)

| | (1) | (2) | (3) |
|---|---|---|---|
| Upto 2 Years Before Bank Deregulation | -5.5410** | -1.0237 | 0.5335 |
| | (2.3759) | (1.0223) | (0.8298) |
| Year of Bank Deregulation | -4.8567* | -1.4491 | 0.4205 |
| | (2.6487) | (1.2761) | (1.1027) |
| Year After Bank Deregulation | -5.7971* | -1.7938 | -0.3857 |
| | (3.3331) | (1.3229) | (1.1115) |
| 2 Years after Bank Deregulation | -6.3875 | -2.8758 | -0.6692 |
| | (4.1181) | (2.0432) | (1.2961) |
| >2 Years after Bank Deregulation | -4.1204 | -7.4331** | -2.7999** |
| | (4.3374) | (3.3138) | (1.2484) |
| N | 893 | 893 | 893 |
| $R^2$ | 0.02 | 0.91 | 0.96 |
| State and Year FE | | ✓ | ✓ |
| State-Level Controls | | | ✓ |

Notes: Coefficients from a regression of the fertility rate on banking reform.
Robust standard errors clustered at state level in parentheses.

## Table 5: Dynamic Impacts of Bank Reform on Fertility (Ind-Level)

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| Upto 2 Years Before Bank Deregulation | -0.0044 | -0.0031$^{*}$ | -0.0024 | -0.0024 |
| | (0.0026) | (0.0015) | (0.0015) | (0.0014) |
| Year of Bank Deregulation | -0.0053 | -0.0043 | -0.0035 | -0.0027 |
| | (0.0039) | (0.0034) | (0.0035) | (0.0039) |
| Year After Bank Deregulation | -0.0054 | -0.0036 | -0.0030 | -0.0021 |
| | (0.0033) | (0.0026) | (0.0025) | (0.0024) |
| 2 Years after Bank Deregulation | -0.0082$^{**}$ | -0.0072$^{**}$ | -0.0063$^{*}$ | -0.0055 |
| | (0.0034) | (0.0030) | (0.0033) | (0.0033) |
| >2 Years after Bank Deregulation | -0.0065$^{*}$ | -0.0072$^{**}$ | -0.0060$^{*}$ | -0.0049 |
| | (0.0031) | (0.0032) | (0.0031) | (0.0031) |
| N | 358,299 | 358,299 | 358,299 | 358,299 |
| $R^2$ | 0.00 | 0.00 | 0.00 | 0.03 |
| State and Year FE | | ✓ | ✓ | ✓ |
| State-Level Controls | | | ✓ | ✓ |
| State-Level Controls | | | | ✓ |

Notes: Coefficients from a regression of the giving birth in last year on banking reform.
Robust standard errors clustered at state year level in parentheses.

## Table 6: Impact of Bank Reform on Other Outcomes Related to Fertility and Marriage

| | Married | Divorced | Age at 1st Child | No. Children | Married Fertility |
|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) |
| Bank Deregulation | -0.0060 | 0.0045 | 0.0318 | -0.0293** | -0.0009 |
| | (0.0049) | (0.0048) | (0.0428) | (0.0110) | (0.0025) |
| Mean Dependent Var. | 0.64 | 0.13 | 22.7 | 1.39 | 0.09 |
| SD Dependent Var. | (0.49) | (0.33) | (4.07) | (1.37) | (0.29) |
| N | 358,270 | 358,270 | 231,086 | 358,270 | 230,619 |
| $R^2$ | 0.14 | 0.03 | 0.22 | 0.23 | 0.06 |

Notes: Coefficients from a diff-in-diff regression of the dependent variable on banking reform. All estimations include state FE, year FE as well state and ind. controls. Robust standard errors clustered at state year level in parentheses.

## Table 7: Impact of Bank Reform on Individual Fertility by Household Income AND Race

| | Lowest Quartile | 2nd Quartile | 3rd Quartile | Highest Quartile |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| **Panel A: White Women** | | | | |
| Bank Deregulation | -0.0052 | -0.0009 | 0.0032 | 0.0028 |
| | (0.0057) | (0.0052) | (0.0055) | (0.0030) |
| Mean Dependent Variable | 0.08 | 0.08 | 0.07 | 0.05 |
| SD Dependent Variable | (0.28) | (0.27) | (0.25) | (0.21) |
| N | 68,512 | 77,880 | 80,656 | 83,535 |
| $R^2$ | 0.04 | 0.03 | 0.03 | 0.03 |
| **Panel B: Non-White Women** | | | | |
| Bank Deregulation | -0.0247 | -0.0101 | 0.0042 | -0.0108 |
| | (0.0162) | (0.0154) | (0.0087) | (0.0175) |
| Mean Dependent Variable | 0.08 | 0.07 | 0.06 | 0.05 |
| SD Dependent Variable | (0.28) | (0.26) | (0.23) | (0.22) |
| N | 20,488 | 11,151 | 8,503 | 7,545 |
| $R^2$ | 0.04 | 0.03 | 0.03 | 0.03 |

Notes: Coefficients from a diff-in-diff regression of giving birth in the last year on deregulation. All estimations include state and year FE, and state and individual level controls. Robust standard errors clustered at state year level in parentheses.

## Table 8: Impact of Bank Reform on Individual Fertility by Household Income

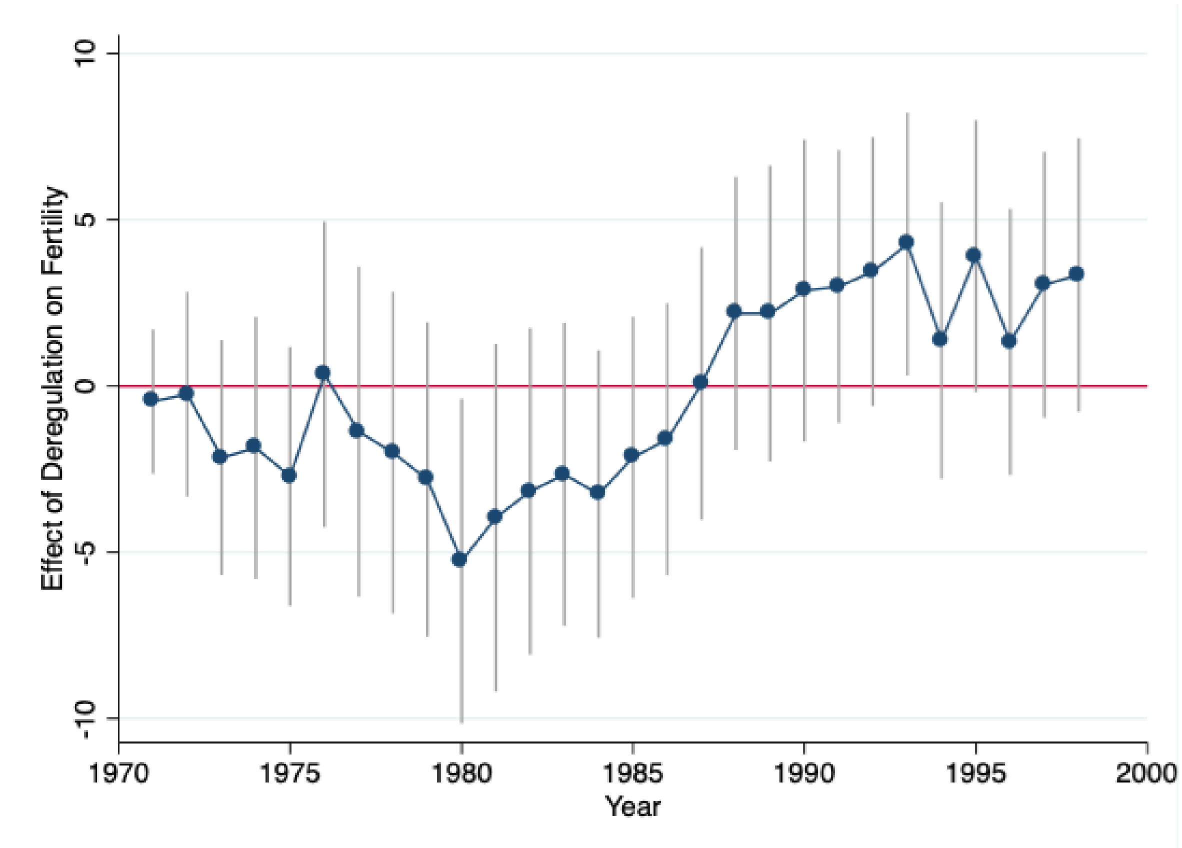
| | Home-Owners | Non Home-Owners |
|---|---|---|
| | (1) | (2) |
| Bank Deregulation | -0.0005 | -0.0037 |
| | (0.0018) | (0.0041) |
| Mean Dependent Variable | 0.06 | 0.08 |
| SD Dependent Variable | (0.24) | (0.26) |
| N | 222,816 | 135,454 |
| $R^2$ | 0.04 | 0.02 |

Notes: Coefficients from a diff-in-diff regression of giving birth in the last year on deregulation.
All estimations include state FE, year FE, and state and ind. controls.
Robust std. errors clustered at state year level in parentheses.

# Appendix A

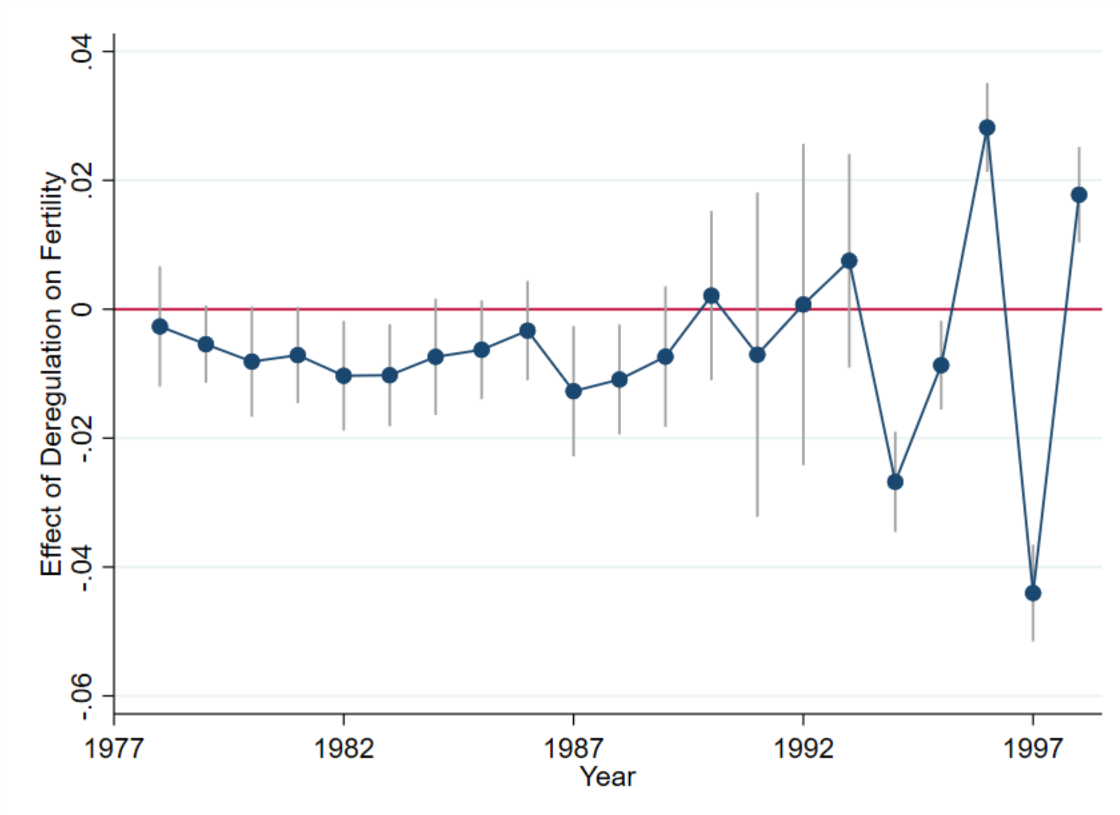
## Appendix A Figures

### Figure A.1: Impacts of Bank Reform on State-Level Fertility, by Year



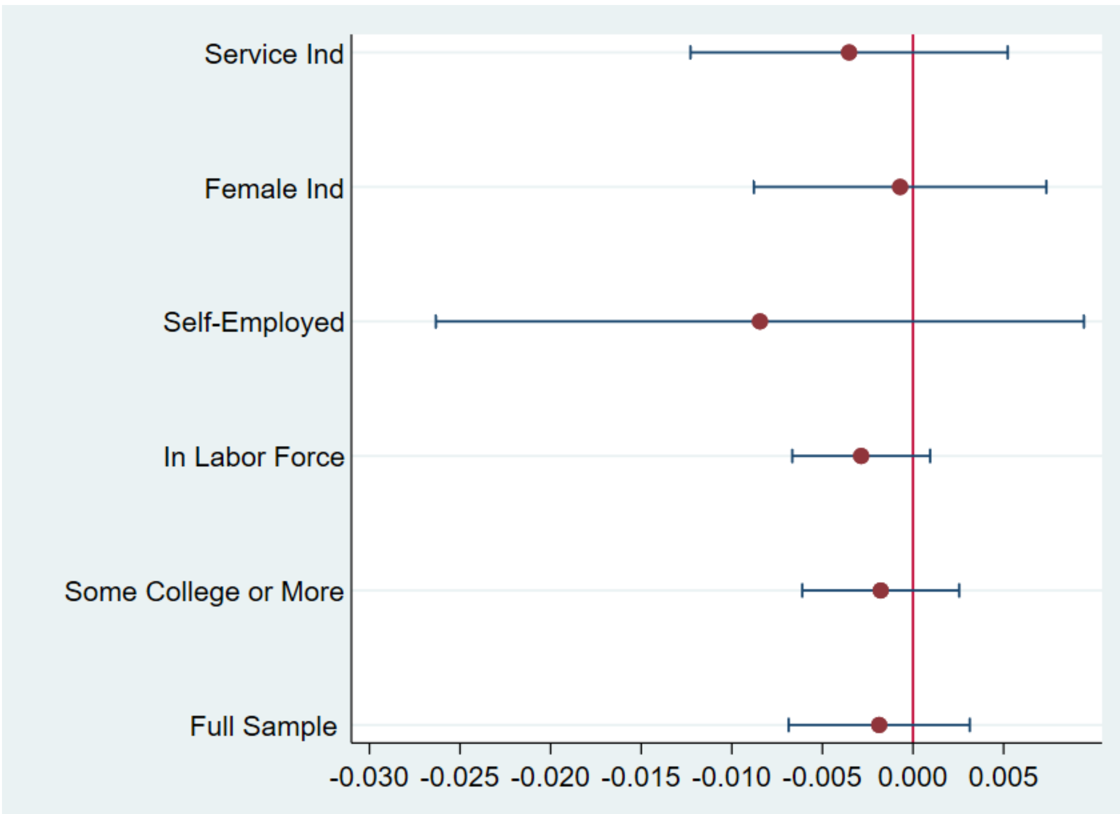

Notes: We show the coefficients of the $\beta$s from our individual difference-in-differences equation as in equation 2, but separately for each year. All specifications include state FE, year FE, state controls for log population, fraction of population white, and fraction of population employed. Standard errors are clustered at the state-year level.

**Figure A.2: Impacts of Bank Reform on Individual-Level Fertility, by Year (Using CPS)**




Notes: We show the coefficients of the $\beta$s from our individual difference-in-differences equation as in equation 3, but separately for each year. All specifications include state FE, year FE, state controls for log population, fraction of population white, and fraction of population employed. Individual controls include a 4th degree polynomial in age, race, and HS or more education. Standard errors are clustered at the state-year level. Sample: Women aged 20-44 in the CPS March Supplement 1977-2000.

## Figure A.3: Impacts of Bank Reform on Individual Fertility, by Sub-Groups of Women




Notes: We show the coefficients of the $\beta$s from our individual difference-in-differences equation as in equation 3, but separately for different sub-groups of women. All specifications include state FE, year FE, state controls for PCI growth, log population and fraction of population employed. Individual controls include a 4th degree polynomial in age, log of household income, race, marital status and HS or more education. Standard errors are clustered at the state-year level. Sample: Women aged 20-44 in the CPS March Supplement 1977-2000. Women are defined to be in service industries based on their `ind1950` status being between 806 and 899. Women are defined to be in 'Female Ind' if the proportion of women working in that industry has more than the mean share of women across all industries in 1977.

## Appendix A Tables

### Table A.1: Weibull Hazard Model to Predict Time to Bank Reform

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| Fertility Rate | -0.0003 | 0.0025 | 0.0001 | -0.0022 |
| | (0.0075) | (0.0144) | (0.0070) | (0.0049) |
| Small Bank Share of Assets | | | 4.0658** | 7.5221*** |
| | | | (1.7945) | (2.7403) |
| Capital Ratio of Small to Large Banks | | | 9.6077* | 4.9604 |
| | | | (5.0632) | (3.8462) |
| Bank Sells Insurance | | | -3.7695*** | -1.2793 |
| | | | (1.3893) | (0.9441) |
| Relative size of Insurance Inc (Sell) | | | 9.8252** | 4.1577 |
| | | | (4.2052) | (3.3043) |
| Relative size of Insurance Inc (Cannot Sell) | | | -0.8890* | -0.0760 |
| | | | (0.5278) | (0.7898) |
| Small Firm Share | | | -11.0676** | -12.8578*** |
| | | | (5.1106) | (3.5232) |
| Unit Banking | | | 0.3097*** | 0.1592* |
| | | | (0.1012) | (0.0813) |
| If State Changes Bank Insurance Law | | | 0.0762 | 0.2444*** |
| | | | (0.0749) | (0.0810) |
| $N$ | 593 | 593 | 593 | 593 |
| State-Level Contemporaneous Controls | | ✓ | ✓ | ✓ |
| State Banking Sector Characteristics | | | ✓ | ✓ |
| Region Dummies | | | | ✓ |

Notes: Coefficients from a diff-in-diff regression of the dependent variable of giving birth within the last year on banking reform. All estimations include state, year FE as well as a state trend. Robust standard errors clustered at state year level in parentheses.

## Table A.2: Weibull Hazard Model to Predict Time to Bank Reform, CPS

| | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| Gave Birth in Last Year | 0.0030 | 0.0026 | -0.0013 | -0.0049 | -0.0049 |
| | (0.0081) | (0.0079) | (0.0069) | (0.0061) | (0.0058) |
| Small Bank Share of Assets | | | 2.1567** | 3.8043*** | 3.8042*** |
| | | | (0.8460) | (0.9543) | (0.9542) |
| Capital Ratio of Small to Large Banks | | | 1.4576 | 1.6371 | 1.6308 |
| | | | (2.7223) | (2.4160) | (2.4146) |
| Bank Sells Insurance | | | -1.9429** | -1.0148** | -1.0160** |
| | | | (0.8638) | (0.5092) | (0.5099) |
| Relative size of Insurance Inc (Sell) | | | 4.3192* | 2.1127 | 2.1168 |
| | | | (2.2782) | (1.4218) | (1.4242) |
| Relative size of Insurance Inc (Cannot Sell) | | | -0.8878*** | -0.6823*** | -0.6825*** |
| | | | (0.2337) | (0.2552) | (0.2550) |
| Small Firm Share | | | -2.2292 | -6.5893** | -6.5848** |
| | | | (7.1953) | (2.6087) | (2.6050) |
| Unit Banking | | | 0.2050 | 0.2068** | 0.2065** |
| | | | (0.1406) | (0.0867) | (0.0866) |
| If State Changes Bank Insurance Law | | | 0.0198 | 0.1024 | 0.1024 |
| | | | (0.0496) | (0.0871) | (0.0870) |
| $N$ | 146089 | 146089 | 146089 | 146089 | 146089 |
| State-Level Contemporaneous Controls | | ✓ | ✓ | ✓ | ✓ |
| State Banking Sector Characteristics | | | ✓ | ✓ | ✓ |
| Region Dummies | | | | ✓ | ✓ |
| Individual Controls | | | | | ✓ |

Notes: Coefficients from a diff-in-diff regression of the dependent variable of giving birth within the last year on banking reform. All estimations include state, year FE as well as a state trend. Robust standard errors clustered at state year level in parentheses.

## Table A.3: Impact of Bank Reform on State-Level Fertility using both Classic TWFE and Borusyak, Jaravel and Spiess (2023) TWFE

| | Classic TWFE | | Robust TWFE | |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| **Panel A: Full Sample** | | | | |
| Bank Reform | -6.3577*** | -3.6512** | -6.3577*** | -1.3632* |
| | (2.3231) | (1.3823) | (2.4250) | (0.7040) |
| Mean Dependent Var. | 71.34 | 71.34 | 71.34 | 71.34 |
| SD Dependent Var. | (14.63) | (14.63) | (14.63) | (14.63) |
| N | 1,457 | 1,457 | 1,457 | 1,073 |
| $R^2$ | 0.05 | 0.89 | | |
| **Panel B: 1970-1989** | | | | |
| Bank Reform | -3.8248 | -3.5307** | -3.8248 | -4.0698*** |
| | (3.5405) | (1.5625) | (3.4257) | (0.6935) |
| Mean Dependent Var. | 74.09 | 74.09 | 74.09 | 74.09 |
| SD Dependent Var. | (15.53) | (15.53) | (15.53) | (15.53) |
| N | 893 | 893 | 893 | 703 |
| $R^2$ | 0.01 | 0.91 | | |
| **Panel C: 1989-2000** | | | | |
| Bank Reform | -0.0734 | 0.7683 | -0.0734 | -0.2542 |
| | (3.2411) | (0.6680) | (3.3154) | (0.4225) |
| Mean Dependent Var. | 66.98 | 66.98 | 66.98 | 66.98 |
| SD Dependent Var. | (11.85) | (11.85) | (11.85) | (11.85) |
| N | 564 | 564 | 564 | 90 |
| $R^2$ | 0.00 | 0.97 | | |
| State and Year FE | | | | |
| | ✓ | ✓ | | ✓ |
| ✓ | | | | |

Notes: Coefficients from a diff-in-diff regression of the fertility rate on banking reform. Robust standard errors clustered at state level in parentheses.

**Table A.4: Impact of Bank Reform on Individual-Level Fertility using Classic TWFE and Borusyak, Jaravel and Spiess (2023) TWFE**

| | Classic TWFE | | Robust TWFE | |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| **Panel A: Full Sample** | | | | |
| Bank Reform | -0.0071*** | -0.0056*** | -0.0075*** | -0.0010 |
| | (0.0015) | (0.0014) | (0.0015) | (0.0021) |
| Mean Dependent Var. | 0.067 | 0.067 | 0.067 | 0.067 |
| SD Dependent Var. | (0.25) | (0.25) | (0.25) | (0.25) |
| N | 681,017 | 681,017 | 681,048 | 416,656 |
| $R^2$ | 0.00 | 0.00 | | |
| **Panel B: 1977-1989** | | | | |
| Bank Reform | -0.0057** | -0.0033 | -0.0056*** | -0.0026* |
| | (0.0020) | (0.0023) | (0.0021) | (0.0015) |
| Mean Dependent Var. | 0.0698 | 0.0698 | 0.0698 | 0.0698 |
| SD Dependent Var. | (0.2548) | (0.2548) | (0.2548) | (0.2548) |
| N | 358,270 | 358,270 | 358,299 | 237,558 |
| $R^2$ | 0.00 | 0.00 | | |
| **Panel C: 1989-2000** | | | | |
| Bank Reform | -0.0062*** | -0.0017 | -0.0049** | -0.0006 |
| | (0.0012) | (0.0034) | (0.0025) | (0.0030) |
| Mean Dependent Var. | 0.0638 | 0.0638 | 0.0638 | 0.0638 |
| SD Dependent Var. | (0.2444) | (0.2444) | (0.2444) | (0.2444) |
| N | 322,747 | 322,747 | 322,749 | 32,005 |
| $R^2$ | 0.00 | 0.00 | | |
| State and Year FE | ✓ | | ✓ | |

Notes: Coefficients from a diff-in-diff regression of the dependent variable of giving birth within the last year on banking reform. Robust standard errors clustered at state year level in parentheses. State-Level Controls in columns (4) and (5) include log population, percent white and percent employed in state. Individual Controls in column (5) include race, HS or college education, and a 4th degree polynomial in age.

# Appendix B: NLSY79 Tables

## Appendix B Tables

### Table B.1: Dynamic Impacts of Bank Reform on Individual Fertility (Using NLSY79)

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| Upto 2 Years Before Bank Deregulation | 0.0157 | 0.0018 | 0.0021 | 0.0033 |
| | (0.0092) | (0.0043) | (0.0044) | (0.0050) |
| Year of Bank Deregulation | 0.0156 | -0.0049 | -0.0037 | -0.0028 |
| | ( (0.0124) | (0.0057) | (0.0053) | (0.0066) |
| Year After Bank Deregulation | -0.0123 | -0.0130** | -0.0119** | -0.0090 |
| | (0.0148) | (0.0038) | (0.0038) | (0.0048) |
| 2 or More Years after Bank Deregulation | 0.0023 | -0.0084 | -0.0063 | -0.0043 |
| | (0.0085) | (0.0060) | (0.0050) | (0.0059) |
| N | 103,139 | 103,139 | 103,139 | 84,550 |
| $R^2$ | 0.00 | 0.01 | 0.01 | 0.02 |
| State and Year FE | | ✓ | ✓ | ✓ |
| State-Level Controls | | | ✓ | ✓ |
| Individual Controls | | | ✓ | ✓ |

Notes: Coefficients from a diff-in-diff regression of the dependent variable of giving birth within the last year on banking reform, with lags and leads. Robust standard errors clustered at state year level in parentheses. State-Level Controls in columns (3) and 4) include PCI growth, log population, and percent employed in state. Individual Controls in columns (3) and (4) include race, HS or college education, log of household income, and a 4th degree polynomial in age. Sample: Women aged 20-44 in the NLSY79 1979-2000, not including states of SD, DE, AK and HI.

## Table B.2: Impact of Bank Reform on Other Outcomes Related to Fertility (Using NLSY79)

| | Married | Divorced | Uses Birth Control | No. of Children | Fertility, if Married |
|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) |
| Bank Deregulation | -0.0106 | 0.0092 | 0.0790 | 0.0065 | -0.0038 |
| | (0.0218) | (0.0105) | (0.0781) | (0.0363) | (0.0114) |
| Mean Dependent Variable | 0.8 | 0.11 | 0.70 | 0.75 | 0.12 |
| SD Dependent Variable | (0.41) | (0.31) | (0.47) | (1.33) | (0.25) |
| N | 38,122 | 38,122 | 33,742 | 21,151 | 10,386 |
| $R^2$ | 0.25 | 0.13 | 0.23 | 0.04 | 0.04 |

Notes: Coefficients from a diff-in-diff regression of the dependent variable on deregulation, incl. state and year FE.
Robust standard errors clustered at state year level in parentheses. All estimations include state and individual level controls.
State contemporaneous controls include PCI growth, log of population and fraction employed. Individual controls include race,
HS or more education, log of household income and a fourth degree polynomial in age.
Sample: Women aged 20-44 in the NLSY79 1979-2000, not including states of SD, DE, AK and HI.

## Table B.3: Impact of Bank Reform on Individual Fertility by Household Income and Race (Using NLSY79

| **Panel A: White Women** | | | | |
|---|---|---|---|---|
| | Lowest Quartile | 2nd Quartile | 3rd Quartile | Highest Quartile |
| | (1) | (2) | (3) | (4) |
| Bank Deregulation | -0.0063 | -0.0086 | -0.0021 | -0.0034 |
| | (0.0161) | (0.0085) | (0.0074) | (0.0075) |
| N | 15,116 | 18,634 | 22,795 | 25,577 |
| $R^2$ | 0.24 | 0.24 | 0.21 | 0.18 |
| **Panel B: Non-White Women** | | | | |
| | Lowest Quartile | 2nd Quartile | 3rd Quartile | Highest Quartile |
| | (1) | (2) | (3) | (4) |
| Bank Deregulation | -0.0151 | -0.0078 | 0.0116 | 0.0012 |
| | (0.0087) | (0.0104) | (0.0133) | (0.0192) |
| N | 19,823 | 16,070 | 12,820 | 10,248 |
| $R^2$ | 0.19 | 0.26 | 0.23 | 0.20 |

Notes: Coefficients from a diff-in-diff regression of giving birth in the last year on deregulation. All estimations include state and year FE, and state and individual level controls and individual fixed effects. State controls include PCI growth, log of population and fraction employed. Individual controls include HS or more education, log of household income and a fourth degree polynomial in age. Robust std. errors clustered at state year level in parentheses. Sample: Women aged 20-44 in the NLSY79 1979-2000, not including the states of SD, DE, AK and HI.

**Table B.4: Impact of Bank Reform on Individual Fertility by Home-owning Status Using NLSY79)**

| | Home-Owners<br>(1) | Renters<br>(2) |
|---|---|---|
| Bank Deregulation | -0.0021 | -0.0052 |
| | (0.0059) | (0.0060) |
| Mean Dependent Variable | 0.06 | 0.08 |
| SD Dependent Variable | (0.24) | (0.26) |
| N | 95,913 | 52,147 |
| $R^2$ | 0.13 | 0.21 |

Notes: Coefficients from a diff-in-diff regression of giving birth within the last year on deregulation. All estimations include state FE, year FE, and state and ind. controls as well as individual fixed effects. State controls include PCI growth, log of population and fraction employed. Individual controls include HS or more educ., log of HH income and a fourth degree polynomial in age. Robust std. errors clustered at state year level in parentheses. Sample: Women aged 20-44 in the NLSY79 1979-2000, not including the states of SD, DE, AK and HI.

**Table B.5: Impact of Bank Reform on Individual Fertility by Bankruptcy/ Credit Debt**

| | Ever Bankrupt | | Ever Missed Any Bill Payments | | Ever Maxed Out Any Credit Cards | |
|---|---|---|---|---|---|---|
| | No | Yes | No | Yes | No | Yes |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| **Panel A. Without Individual Fixed Effects** | | | | | | |
| Bank Deregulation | -0.0048 | -0.0404 | -0.0072 | -0.0033 | -0.0211 | -0.0039 |
| | (0.0040) | (0.0330) | (0.0053) | (0.0090) | (0.0107) | (0.0050) |
| Mean Dependent Variable | 0.07 | 0.06 | 0.08 | 0.06 | 0.08 | 0.06 |
| SD Dependent Variable | (0.24) | (0.25) | (0.24) | (0.26) | (0.24) | (0.28) |
| N | 82,528 | 2,022 | 56,721 | 12,666 | 6,167 | 62,777 |
| $R^2$ | 0.02 | 0.07 | 0.02 | 0.03 | 0.03 | 0.02 |
| **Panel B. With Individual Fixed Effects** | | | | | | |
| Bank Deregulation | -0.0028 | -0.0336 | -0.0055 | -0.0006 | -0.0132 | -0.0034 |
| | (0.0046) | (0.0378) | (0.0058) | (0.0080) | (0.0128) | (0.0056) |
| Mean Dependent Variable | 0.07 | 0.06 | 0.08 | 0.06 | 0.08 | 0.06 |
| SD Dependent Variable | (0.24) | (0.25) | (0.24) | (0.26) | (0.24) | (0.28) |
| N | 145,931 | 3,082 | 86,189 | 22,546 | 11,310 | 96,460 |
| $R^2$ | 0.10 | 0.22 | 0.09 | 0.10 | 0.10 | 0.09 |

Notes: Coefficients from a diff-in-diff regression of giving birth within the last year on deregulation. All estimations include state FE, year FE, and state and ind. controls. State controls include PCI growth, log of population and fraction employed. Individual controls include HS or more education, log of HH income and a fourth degree polynomial in age. Robust std. errors clustered at state year level in parentheses.
Sample: NLSY79 1979-2000, not including the states of SD, DE, AK and HI.