Scared Away: Credit Demand Response to Expected Motherhood Penalty in the Labor Market*

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Abstract

In 2016, China shifted from a one-child to a two-child policy, increasing female workers' childbearing responsibilities. Using data from a peer-to-peer lending platform, we find that post-reform loan applications from female college students decrease by 15.6% compared to male students. This decline is more pronounced for long-term large loans and those aimed at human capital investment. Applications drop further after staggered provincial maternity leave extensions and with higher expected motherhood penalties. Our survey results indicate that female students expect worse job prospects under birth-related policies, consistent with the observed decline in borrowing. Credit supply channels are unlikely driving the results.

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1 Introduction

One of the contributing factors to the gender salary gap is the wage penalty for motherhood (see, e.g., Fuchs (1989); Waldfogel (1998); Blau and Kahn (2000); Blau and Kahn (2017)). The burdens of motherhood make some women choose to receive lower education, stay out of the labor force, choose more family-friendly jobs and occupations, or give up promotion opportunities (Baum (2002); Anderson, Binder, and Krause (2003); Aisenbrey, Evertsson, and Grunow (2009)). Budig and England (2001) and Correll, Benard, and Paik (2007) show that mothers may also face disadvantages in the job market because employers think that mothers are less competent or less committed to their jobs. A large body of literature compares the wages and career choices of mothers and childless women and examines whether employers tighten their labor policy for women based on current or future family constraints.

Although the motherhood penalty in the labor market has been well documented in the literature, few have examined whether women *anticipate* the employment effect of childbearing and caring costs. In this paper, we study young women's financial decisions before entering the labor market and before having any children. Do they reduce borrowing and debt burden in anticipation of poorer job prospects? The answer to this question helps us understand how the motherhood penalty affects pre-labor-market choices and beliefs. By observing their real-life decisions, we can gain insights into whether young women adjust their expectations of future income, whereas other studies typically rely on survey responses to capture subjective income expectations (e.g., Dominitz and Manski (1997); Zafar (2011, 2013); Patnaik, Venator, Wiswall, and Zafar (2022)).

We focus on female college students—the vast majority of them have not given birth to children and have not entered the full-time job market yet. College students reach the age of adulthood and start making life decisions on their own. At the same time, college education is one of the most important human capital investments (Becker (1964, 1994)). College students are accumulating skills for their future careers. Their decisions are likely to be influenced by their anticipated future labor income and to have a long-term impact.

We examine college students' responses to policy changes that exogenously deteriorate mothers' job prospects. In 2016, China introduced a universal two-child policy, which relaxed the previous one-child policy that restricted many families to a single child between 1979 and 2015. After the nationwide universal two-child policy was introduced, provincial governments subsequently lengthened maternity leave in 2016 in a staggered manner. To the extent that future employers anticipate that some of the college graduates will become mothers of two children, the extra costs of childbearing and childrearing affect the balance between hiring male and female students (Agarwal, Li, Qin, and Wu (2022)). According to several surveys conducted around 2016, many respondents believe that the universal two-child policy negatively influences women's career development.[1]

Using comprehensive data from MingXiaoDai, a leading peer-to-peer (P2P) lending platform targeting college students in China,[2] we examine the gender difference in loan ap-

[1]The China Youth Daily conducted a survey in November 2015, shortly after the government announcement of the universal two-child policy. 71.4% of the respondents believe that having a second child would have a negative impact on female workers. A 2016 report from Beijing Normal University shows that 51% of young mothers in urban areas with two children are willing to give up personal development opportunities for the sake of their families. In a 2017 survey conducted by Peking University and Zhaopin.com, a large recruitment website, 22% of women believe that gender discrimination in employment is serious, 8% higher than the percentage of men who share the same view. Among single women, 25% of them think that gender discrimination in promotion is serious.

[2]The market share of MingXiaoDai had reached 63% by the end of 2015 and became the largest P2P lending platform targeting college students in China.

plications. Our difference-in-differences strategy finds a both economically and statistically significant decrease in female loan applications—female students in a college on average reduce their borrowing by 15.6% relative to male students in the same college after July 2015, when the universal two-child policy started to arouse public attention, as reflected by the Internet search volume. The insignificant pre-trend distinctions between female and male loan applications support the parallel trend assumption for our difference-in-differences strategy. We also estimate the effect at the individual level. Around 60% of female students reduce their borrowing propensity relative to male students after the shock.

Is this result due to a decrease in credit demand from female college students or a tightening of credit supply to female applicants by the P2P platform? To differentiate between the demand and supply channels, we examine detailed loan approval and performance information. We find that compared with their male schoolmates, the approval rate for female college students increases, suggesting that loan screening does not become stricter for female applicants. Although it cannot completely rule out the supply channel as credit tightening on female students may have deterred low-quality borrowers in the first place, we track payment performance before and after the event to further mitigate this concern. If more stringent screening applies to female applicants, we expect to see a lower delinquency rate as a result. However, we find that the delinquency rate remains almost unchanged after the shock, again supporting that the shrinking in female applications more likely comes from the demand side.

We specifically align our analysis with the timing of the shock caused by the shift from one-child to two-child policy, examining how loan applications change on a monthly level around this pivotal event. We also observe a larger decline in female loan applications in

regions that experienced greater post-policy increases in fertility. To further strengthen our identification, we exploit the variation in provincial reforms on maternity leave and apply a staggered difference-in-differences strategy. Following the nationwide universal two-child policy, provincial governments further extended maternity leave successively in 2016 to support relaxing birth control. As extended maternity leave directly incurs additional costs for employers, we expect even worse future employability of female college students. Our results support this view: extending maternity leave leads to a significant decrease in local applications for female students in the next three months, relative to their male schoolmates. Moreover, we repeat the test using only male loan applications and confirm that the observed results are not driven by the increase in their applications.

One concern is whether female students can anticipate that birth policies negatively affect their future labor market outcomes. To investigate this, we conducted a survey of full-time university students in China. Although conducted in 2026, the survey provides contemporaneous evidence on how students reason about the link between recent birth-related policy changes and employer behavior.[3] The survey received 691 responses from students across 438 universities. Most respondents expect increased employer concerns about birth-related labor costs and a preference for hiring and promoting men, along with a pessimistic outlook regarding women's job prospects and income potential. Notably, female students demonstrate a heightened awareness of these negative outcomes compared to their male counterparts. These insights suggest that college students, particularly female

[3]While the policy changes we analyze were implemented in 2016, additional policy shifts have occurred since then. In 2021, China adopted a three-child policy along with several resolutions aimed at boosting the birth rate and reducing the cost of child-rearing. In 2024, the General Office of the State Council issued a series of new birth support policies that seek to strengthen birth-related services and ensure the effective implementation of legally mandated maternity leave and other related forms of leave.

students, have a clear understanding of the potential labor market impacts of birth policies, supporting our earlier findings on financial responses among female college students.

When female college students anticipate negative outcomes in the job markets, they may hesitate to apply for loans due to concerns about their employment prospects and, consequently, their ability to repay their borrowings. We examine this potential mechanism from various angles. Our evidence suggests that female students' job market prospects are linked to their borrowing behavior; however, we do not rule out some other possible coexisting channels, such as those related to the marriage market or consumption and saving concerns.

First, we exploit the heterogeneity in loan and applicant characteristics. The discouraging effect of the two-child policy on female students' borrowing is particularly pronounced for long-term and large-amount loans. This suggests that female college students are concerned with their future employment prospects, leading them to be more worried about their ability to repay substantial loans. Notably, the impact is greater for loans intended for human capital investment, suggesting that the lower propensity for human capital investment among female college students contributes to their reduced borrowing. Interestingly, the effect of the policy is even stronger for female students majoring in STEM (science, technology, engineering, and math) as they may face a more competitive job environment in these male-dominated fields (Adams and Kirchmaier (2016); Committee on Equal Opportunities in Science and Engineering (2015)).

We also use education statistics from the Ministry of Education to examine the gender gap in pursuing postgraduate studies, which is crucial for college students in China seeking to enhance their human capital. Our findings reveal a sharp decrease in the enrollment ratio of female master students in 2017. More importantly, the extent of the decrease in female

enrollment is significantly and positively correlated with the identified policy effects on female loan applications across provinces. This geographical pattern further supports our argument that young women invest less in human capital following the introduction of the universal two-child policy.

Second, we explore variations in the local economic environment and structures across regions. Our results show that female college students become more conservative about borrowing after the introduction of a universal two-child policy if their universities are located in more developed areas. Relatedly, if an area is more market-oriented, as indicated by a lower share of the state-owned sector, the effect on female loan applications is stronger. As firms and employers may prioritize production efficiency in more developed and market-oriented regions, they are more likely to tighten their labor policy for women due to the higher manpower cost induced by the two-child policy. As a result, female college students face stronger labor market challenges in these regions and consequently become more reluctant to take on debt.

Third, we find that female students from hometowns with a stronger preference for sons reduce their borrowing more after the shock. Such son preference may have shaped these students' beliefs, making them more cognizant of gender discrimination and therefore leading to lower expected future earnings. On the other hand, an alternative channel that female students' parents may have a second child to redistribute family resources does not seem to fully explain our findings, as female students whose hometown has a higher fertility rate increase after the shock do not exhibit stronger results.

Our paper has important policy implications. To lower the gender pay gap and gender inequality, complementary policies can be designed to help employers recover their losses

in productivity due to maternity leaves and childbearing. In 2021, China adopted a three-child policy. Yang (2022) estimates that, as a result of the three-child birth policy and the extended maternity leave policy, a company must cover an average birth cost ranging from ¥32,000 to ¥95,900 (around US$4,420 to $13,250) for each female employee giving birth to one to three children. Of these childbirth costs, social insurance premiums and wages for antenatal visits and breastfeeding breaks each represent approximately 30%, while maternity benefits account for about 45%. Policies that help companies recover some of these costs will likely enhance female workers' employability, encourage female students to invest more in their human capital, and reduce the gender gap in the labor market.

Related Literature Our work contributes to several strands of literature. We contribute to a large literature on the gender gap in the labor market (see Altonji and Blank (1999) and Blau and Kahn (2017) for comprehensive reviews), in particular, on gender differences in hiring (e.g., Neumark, Bank, and Van Nort (1996); Goldin and Rouse (2000); Booth and Leigh (2010)). Since the policies we examine are likely to increase female workers' childbearing and caring responsibilities, our paper is related to studies on female workers' disadvantages due to their fertility and motherhood (e.g., Waldfogel (1998); Anderson, Binder, and Krause (2002); Bertrand, Goldin, and Katz (2010); Becker, Fernandes, and Weichselbaumer (2019); Barber, Jiang, Morse, Puri, Tookes, and Werner (2021); Huang, Lei, and Sun (2021)).[4] Notably, Kleven, Landais, and Leite-Mariante (2024) estimate child

[4] Kuziemko, Pan, Shen, and Washington (2020) also examine young women's anticipation about the motherhood effect on future employability. Through surveys, they provide evidence that U.S. and U.K. women tend to underestimate the effects of motherhood on their employment, a notable shift from the overestimations observed in the 1960s. By analyzing their borrowing behaviors on a P2P platform, our paper suggests that Chinese female college students do anticipate increased childbearing and caring costs due to policy changes in 2016.

penalties in employment across 134 countries and confirm the presence of such penalties in China. While the situation in China is less severe than in other countries in Asia, Europe, and North America, the strong responses observed among female students to the policy changes and their implications for employment suggest that the potential impacts of motherhood on women's job prospects could be substantial worldwide.

Our paper also closely relates to the recent literature on the negative female labor market outcomes of the two-child policy in China (e.g., Agarwal, Li, Qin, and Wu (2022) and He, Li, and Han (2023)). While these studies focus on the declines in labor demand for females due to fertility relaxation, we highlight the endogenous response from prospective female job seekers, especially their human capital investment response, which will exacerbate the gender gap in labor markets.

We add to the research on gender differences in financial markets and industries. For example, Egan, Matvos, and Seru (2022) disclose gender differences in punishment of misconduct in the financial advisory industry. Atkinson, Baird, and Frye (2003) and Niessen-Ruenzi and Ruenzi (2019) document differences in inflows in male- and female-managed funds, albeit without gender differences in fund performance. Sunden and Surette (1998) find gender and marital differences in allocating their assets in retirement savings plans. Barber and Odean (2001) document that men trade more aggressively than women but perform worse in stock markets. Goldsmith-Pinkham and Shue (2020) study the gender gap in housing markets and find that single women earn significantly lower returns than single men. Adams and Funk (2012) examine gender differences in the boardroom. Related to our paper, Adams and Kirchmaier (2016) investigate the gender ratios of boards across industries and find that women are more underrepresented on the boards for the

STEM and Finance firms. Our paper explores gender differences in borrowing from a P2P platform in the presence of aggravated future employability in the labor market.

Furthermore, our work is related to emerging research on P2P lending, especially disparities in P2P lending across different borrower characteristics, including appearance (e.g., Duarte, Siegel, and Young (2012)), race (e.g., Pope and Sydnor (2011)), location (e.g., Lin and Viswanathan (2016)), culture (e.g., D'Acunto, Ghosh, and Rossi (2022)) and social network (e.g., Lin, Prabhala, and Viswanathan (2013)). Previous studies such as Barasinska and Schäfer (2014) and Chen, Huang, and Ye (2020) also investigate the gender gap in P2P lending. However, they mainly focus on gender differences from the lending platform, while our research emphasizes the change in female students' borrowing behaviors in anticipation of difficulties in the labor market.

2 Background

2.1 The Universal Two-Child Policy and Provincial Maternity Leave Extensions

China enacted the one-child policy in 1979 to control its birth rate and population growth. To address the aging population issue, since 2009, provinces in China have gradually relaxed the one-child policy to allow two children of one couple if both parents are the only children from each family. In 2014, China further amended the policy by allowing two children if at least one parent was the only child. On October 29, 2015, the Chinese government announced a shift to a universal two-child policy, covering all families.[5] The

[5]While the universal two-child policy only directly affects adults with siblings, China's Inter-Census Population Survey (2005) suggests that 75.5% of men and 81.5% of women aged 20 to 40 had at least one sibling in 2015 (these figures are calculated based on the 10–30 age group in the 2005 survey). As noted by He, Li, and Han (2023), the existence of a significant number of people with siblings can be attributed to various factors such as exemptions given to ethnic minorities, relaxed regulations that permitted a second child for eligible households, or difficulties in implementing the rules in rural areas. Consistent with these explana-

new law was passed by the National People's Congress Standing Committee on December 27, 2015, and took effect on January 1, 2016.

Before October 2015, the universal two-child policy had already been widely discussed. In July 2015, the National Health and Family Planning Commission responded to the inquiries on the universal two-child policy by stating that the relevant regulations were under development. As shown in Figure 1, searches for "the universal two-child policy" or other related keywords first surged in July 2015 on Baidu, China's leading search engine. Notably, search volume peaked at the end of October 2015 when Xinhua, the central government media outlet in China, reported the transition to a universal two-child policy, a decision made by the Fifth Plenary Session of the 18th Central Committee of the Communist Party of China held in Beijing. We then observed several spikes in Baidu search volume in late December 2015, when the new law was officially passed, and at the beginning of January 2016, when the policy was effective.

After the central government introduced the nationwide universal two-child policy, provincial governments followed in 2016 by rolling out extended maternity-leave reforms to further promote population growth.[6] According to the census data from the National Bureau of Statistics, the birth rate in 2016 surpassed that in 2003 for the first time, reaching 12.95‰ (Liu and Liu (2020)).

tions, we show in Section 5.3.4 that our results are weaker in regions with a higher proportion of (non-Han) minorities and residents with agricultural household registration ("hukou"), suggesting that minority women and those in rural areas are less affected by the universal two-child policy.

[6]Details of these provincial reforms to maternity leave are provided in the Internet Appendix.

2.2 P2P Platform in China

Peer-to-peer (P2P) lending, a financial innovation to lend money to individuals or businesses through online platforms that match lenders and borrowers, experienced rapid growth from 2007 to 2018 in China. This expansion was significantly influenced by the initial issuance of company licenses in pilot cities in 2009, which marked a pivotal moment for consumer finance. In 2013, the Chinese government granted more market access and promoted collaboration among banks, private capital, and internet companies, leading to rapid expansions of the industry. During this period, major P2P lending platforms (e.g., MingXiaoDai, RenRenDai, etc.) emerged, alongside consumer loan products like JD Baitiao and Ant Credit Pay, which quickly gained popularity. However, due to regulatory challenges in recent years, the P2P lending business had been completely suspended in China by the end of 2020.

According to a 2018 report from the website WDZJ,[7] which provides comprehensive news, data, and reports on all the P2P lending platforms in China, the number of operational P2P platforms was 1,021 by the end of 2018. The total volume of all P2P platforms reached 1,795 billion RMB in 2018. The average annual return for P2P lending stood at 9.81%, with an average loan term of 12.65 months, the total number of lenders was approximately 13.3 million, and the total number of borrowers was 19.9 million. Individual lending constituted the primary business type with a share of 84.5%, whereas company lending represented only 10%.

Amid the rapid expansion of the credit market in China, the credit landscape for univer-

[7]The website WDZJ (www.wdzj.com) was the first and largest portal for P2P lending in China. However, the website had been suspended following the collapse of the P2P lending industry in China.

sity students also saw significant growth. According to the 2016 report from iResearch, a major consulting firm in online marketing and the Internet finance sector in China, the size of the overall consumption market for college students was estimated to reach 452.4 billion RMB in 2016. And in this market, fintech companies play an important role by providing credit products. The transaction volume of fintech credit among college students exploded with a growth rate of 746.7% in 2015. It was further expected to reach 80.1 billion RMB in 2016 and 141.2 billion RMB in 2017. Specifically, P2P lending platforms themselves were popular among students while being a significant funding source for other credit products such as installment plans of online purchases.[8] Meanwhile, due to the high demand for vocational training and qualification certificates in China, college students also frequently turn to P2P loans to cover education-related expenses, such as off-campus tutoring and certificate exam registration.[9]

The previous success of P2P lending among college students can be attributed, in part, to the lack of alternative credit products catering to this group. State-provided loans are only available to students with financial difficulties in paying tuition fees and daily living expenses.[10] Unlike in many Western countries, credit cards are hardly accessible to students in China. In addition to prohibiting banks from issuing credit cards to those under

[8]According to a 2017 report from Sina Finance (https://cj.sina.com.cn/article/detail/5617157631/326548), a major business news portal in China, the top three loan purposes among college students in China are education expenditures, entrepreneurship financing, and consumption.

[9]A 2020 report from iResearch and New Oriental (https://pdf.dfcfw.com/pdf/H3_AP202204151559406158_1.pdf), a leading provider of private education service in China, highlights that College English Tests (CET-4 and CET-6), the National Graduate Entrance Examination, and professional certification are three key areas of focuses for Chinese college students preparing for future job markets. As such, the off-campus tutoring market for these purposes has been steadily growing over the years.

[10]According to the guidelines published by the Ministry of Education (https://hudong.moe.gov.cn/jyb_xwfb/xw_zt/moe_357/jyzt_2015nztzl/2015_zt06/15zt06_gxzzzc/gxzz_bzks/201508/t20150810_199211.html), applications for these government loans undergo rigorous scrutiny by both the school and the financial institution designated by the local government. This process involves lengthy assessments and ongoing monitoring.

18, the government imposes strict criteria for eligible students. They must obtain written consent from a secondary source of repayment, typically their parents, in order to apply. Consequently, with their convenient online access, rapid approval processes, and attractive promotions, P2P lending platforms have swiftly captured the college student market in China.

This paper focuses on MingXiaoDai, a leading P2P platform in China that specifically targets college students by offering both short-term and long-term loans. The platform maintained a fixed interest rate of 0.99% per month. Established in December 2013, MingXiaoDai experienced rapid growth and, by the end of 2015, commanded a 63% market share in P2P loans for college students. In our data, the total volume of loan applications submitted through MingXiaoDai amounted to 13.5 billion RMB, with approved loans totaling 8 billion RMB.

3 Data

3.1 Loan Data

We obtain the loan information from the MingXiaoDai website, with our sample period spanning from January 2015 to May 2017. Our data sample encompasses the universe of the loan information available on the platform, including 2,097,809 loan applications from 908,627 student borrowers, consisting of 664,706 male and 243,927 female students. The platform has approved a total of 1,133,844 loan applications from 621,865 borrowers, which includes 456,775 male students and 165,090 female students.

Each application record contains both the borrower and loan information. We obtain borrower information, such as their identification number within the platform, gender, age,

annual family income, place of residence (including province and city), university name and location (including province and city), major, enrollment time, and borrowing date. The loan information consists of the loan amount, interest rate, loan term, loan date, loan purpose, and repayment status.

Table 1 reports summary statistics of our dataset at the university-gender-month level, which serves as the basic unit of observation in our empirical tests. Starting from the aggregated sample of loan applications, we apply two filtering criteria to refine our final sample for further analysis. First, we require non-missing observations for key variables, which are the school and gender of applicants. Second, we require non-missing observations for every university-gender group each month before the national implementation of the universal two-child policy in January 2016.[11] Finally, there are 21,605 observations at this level, including 15,950 for male groups (university-month) and 5,655 for female groups (university-month) across 579 universities. While there are on average 32.3 loan applications per month per college, male students file significantly more applications than their female counterparts. This pattern is also evident in the total loan amounts, indicating a relatively stronger willingness to borrow among male college students. Besides, 14% of total applications come from students in STEM majors, with male students representing a significantly larger portion within this group.

We further summarize statistics regarding loan characteristics and the gender gap at the university-month level. Our analysis reveals that male applicants are more inclined to borrow for consumption purposes, whereas female applicants demonstrate a stronger demand

[11]This restriction means that our analysis focuses on university-gender groups that are actively borrowing in the pre-period. Relaxing the restriction does not change our conclusion.

for loans aimed at human capital investment. Additionally, male applicants tend to apply for loans with smaller amounts and shorter terms, aligning with their higher likelihood of borrowing for the purpose of consumption. Lastly, loan applications from female students are, on average, more likely to be approved.

Figure 2 depicts the monthly average number of loan applications submitted by female (red line) and male (blue line) students at each university during the sample period from January 2015 and May 2017. We set August 2015 at event time 0, marking the point when the universal two-child policy started to capture public attention, as evidenced by the Baidu Search Volume Index shown in Figure 1.

Figure 2 illustrates an increasing trend in the number of loan applications over time, implying a rapid expansion in the P2P business during our sample period. As a comparison, we also plot the amount of short-term consumption loans issued to households in China, based on statistics published by the People's Bank of China. Consumption loans have also been expanding during our sample period.[12]

Several dips in the number of P2P loan applications from students are expected due to winter breaks around the Lunar New Year, such as February 2015 and 2016 (event time -6 and 6) and January 2017 (event time 17), and the summer breaks, such as July and August in 2015 and 2016 (event time -1, 0, 11 and 12).[13] More interestingly, the gap between

[12]The data are obtained from the website of People's Bank of China, under the section "Sources and Uses of Credit Funds of Financial Institutions" (`http://www.pbc.gov.cn/en/3688247/3688975/3718249/4503802/index.html`).

[13]One possible explanation to these dips in loan applications is that students receive more financial support from families during these special periods. For instance, students often receive red packets from parents and relatives during the Chinese New Year. According to a survey conducted by China Daily in 2016 (`http://caijing.chinadaily.com.cn/finance/2016-02/29/content_23684369.htm`), more than 75% of respondents reported amounts between ¥100 and ¥800 for each red packet, which can help partially cover students' expenditures.

male and female applicants remained relatively stable until July 2015. Since then, the gap has rapidly widened from August 2015 (event time 0) to January 2016 (event time 5) and has not reverted by the end of our sample period. Furthermore, the borrowing trend of male students aligns more closely with the overall development of short-term consumption loans, while female loan applications have gradually diverged from the national trend since 2016. This implies that the gender difference in loan applications is more likely to be driven by a decline in female borrowing. In our following empirical analysis, we will exploit this pattern by adopting a difference-in-differences approach to identify the impact of the two-child policy on the gender difference in loan applications.

The loan amount displays a similar pattern over our sample period. Figure 3 shows a comparison of average loan amount by gender across universities between January 2015 and May 2017. Despite the overall upward trend and regular dips in school holidays for both genders, the disparity in the total loan amounts applied for by male and female students increased significantly after July 2015, when the policy started to be discussed in the media and searched for on the Internet.

3.2 Regional Economic and Population Data

We use regional economic data to exploit the time and geographic variation of local economic development for heterogeneity tests. The key assumption for this analysis is that college students are likely to remain in their local city or province for employment after graduation. This assumption is supported by graduate employment reports published by universities and colleges nationwide.[14] We collect economic data at different levels and

[14]According to a report on employment of college graduates by Shanghai Ranking Consultancy, a renowned organization specializing in higher education intelligence and consultation, the national mean of local reten-

match them with the locations of loan applicants' universities and colleges in our loan dataset.

First, we collect regional data on various economic development measures, including GDP, GDP per capita, urban disposable income, and urban consumption expenditure. While the GDP-related variables are available at both province and prefecture levels, income and consumption measures for urban populations are reported only at the province level. All data on economic development are sourced from the China Statistical Yearbook and the Statistical Yearbooks for the provinces. We utilize this regional economic data to identify developed regions.

We also use property price as another proxy for regional development by following the classification provided by the Residential Property Price Index published by the National Bureau of Statistics of China. Specifically, the Bureau categorizes Beijing, Shanghai, Guangzhou, and Shenzhen into the four "Tier-1 Cities," while the remaining capital and sub-provincial cities across all provinces and autonomous regions are classified as "Tier-2 Cities" for tracking their housing markets.

We also gather regional data on local employment markets by tracking the number of employees across various urban units. Information about urban employment is from China Labor Statistical Yearbooks. Among the different types of units, we are particularly interested in those with state involvement to assess how state-oriented local job markets are. Therefore, we focus on three subcategories available in the yearbook: state-owned units, state jointly-run enterprises, and sole state-owned companies.[15] We aggregate the

tion rate is 62.58% for the undergraduate Class of 2017. They collected data from employment reports of graduates from over 350 colleges and universities across provinces in China.

[15] State-owned units refer to various enterprises, institutions, government administrative organizations at

number of employees in these subcategories to calculate the ratio of the state-owned sector to the total urban employment within these units.[16]

Lastly, we collect regional data on population and fertility to examine heterogeneous policy effects from a social perspective. Our focus is to address fertility-related concerns in three aspects: the restrictiveness of the historical one-child policy, the responsiveness to the current policy relaxation, and the prevalence of son preference as a social norm. For these purposes, we construct indicators based on measures like population structures, birth rates, and sex ratios. Such information is from the China Statistical Yearbooks and five national population censuses conducted from 1982 to 2020.

4 Empirical Strategy

We employ difference-in-differences strategies to test the effect of the policy changes on the borrowing behaviors of female college students compared to male students through the P2P platform. Although the universal two-child policy officially took effect on January 1, 2016, as shown in Figure 1, the policy had been spotlighted on social media as early as late July 2015. Therefore, we use August 2015 as the cut-off month for our primary setting. Our main regression specifications are as follows:

different levels, and social organizations that are state-owned or utilize state production means. Note that economic units classified as "companies" under the Company Law of China are not included in this subcategory. State jointly-run enterprises refer to economic units established through joint investment by two or more state-owned corporate enterprises or institutions. Sole state-owned companies are limited liability companies established solely by state-authorized investment institutions or departments.

[16]Total urban employment of units, or "Danwei," refers to all individuals registered in urban areas who work in government agencies at various levels, political and party organizations, social organizations, enterprises, and institutions, and receive wages or other forms of payment. Note that in the yearbook, employment in urban private enterprises and individual units is included in another category for total urban employment. We find that including employment from urban private enterprises and individual units in our calculation of ratios produces similar results in unreported regressions for subsequent tests, so we adhere to the dichotomous categorization used in the yearbook.

$$y_{u,g,t} = \alpha + \beta \cdot \text{Post}_{t \geq t*} \times \text{Female}_i + \gamma_{s,t} + \psi_{u,g} + \epsilon_{u,g,t} \quad (1)$$

where the dependent variable $y_{u,g,t}$ is at the university(u)-gender(g)-month(t) level. $\text{Post}_{t \geq t*}$ is an indicator taking one since month t*. Female_g is an indicator taking one for female applicants. We are interested in the interaction term between $\text{Post}_{t \geq t*}$ and Female_g as it captures the difference-in-differences effect. We also consider strict fixed effects to control for possible confounding factors. Specifically, $\gamma_{s,t}$ denotes city-year-month fixed effects which will absorb any regional time-varying economic conditions that may affect students' borrowing activities. $\psi_{u,g}$ denotes university-gender fixed effects which consider the variations of gender composition across different universities. A similar regression, using a staggered difference-in-differences strategy, is run when we exploit the staggered provincial maternity leave extensions.

When we explore the heterogeneity of the effect, we further introduce an additional interaction between a variable of economic opportunities or structures and the difference-in-difference term and examine whether the effect gets intensified or mitigated by varying in a specific economic dimension. The specification is as follows:

$$y_{u,g,t} = \alpha + \beta \cdot \text{Post}_{t \geq t*} \times \text{Female}_g \times \text{Z}_{s,t-1} + \gamma_{s,t} + \psi_{u,g} + \epsilon_{u,g,t} \quad (2)$$

where $\text{Z}_{s,t-1}$ denotes a dummy variable indicating different economic conditions of the region in the previous calendar year. We take a one-year lag on the economic variable to examine whether the impact of the reformed policy varies with the past economic environment.

5 Empirical Results

5.1 Baseline effect

5.1.1 Does the universal two-child policy affect loan applications?

We first examine whether female college students reduce their willingness to borrow after the introduction of the universal two-child policy. Table 2 presents the difference-in-differences regression results. The national implementation of this reformed policy began on January 1st, 2016. We define the treatment period as all sample months from January 2016. Column (1) presents the result of its effect on the log of the number of loan applications after the policy implementation. It shows that female college students significantly reduce their applications following the shock. In terms of economic magnitude, the reform, on average, leads to a decrease in loan applications of 12.75% (=$e^{0.120}$-1) for female college students relative to their male counterparts in the same college.

To better illustrate the importance of this effect, it is worth mentioning that the average loan amount of an application is ¥7,878.5 (=254,474.8/32.3). Also, the average amount of a loan application from a female student (¥8,074.0) is higher than that from her male schoolmate (¥7,847.4). By comparing the average loan value with the college tuition fee, which varies from ¥4,000 to ¥7,000 per school year for most majors in public universities[17], we can see that borrowing represents a significant financial decision for college students. This is particularly true when the average monthly expense for Chinese college students is only less than ¥2,000.[18] Moreover, data from Zhaopin.com, a major recruitment website,

[17] College tuition fees for public schools are relatively stable over time as required by the central government. Provincial governments are only allowed to adjust their standards for schools slowly.

[18] According to a survey study done by MyCos and Tencent Education in 2020, college students spend on average ¥1,734 per month (excluding tuition fees and transportation expenses) with mostly of these expenses covered by their parents and relatives. MyCos is a leading higher education consulting firm in China.

indicates that the average expected (and actual) monthly salary for college graduates' first jobs was ¥4,985 (¥4,765) in 2016. This shows that college students are making decisions involving substantial amounts of money when borrowing. He, Li, and Han (2023) find evidence that employers discriminate against job candidates of childbearing age, most likely young women, in the labor markets after the two-child policy is implemented, in anticipation of potential productivity reduction due to their future commitment to family obligations. Our results suggest that female university students are strongly concerned about the poorer job prospects and weaker repayment abilities induced by the two-child policy, leading them to be noticeably more hesitant to borrow before entering the job market.

A valid concern regarding this result is the possibility of information leakage about potential reforms prior to the national implementation of the universal two-child policy. If this is the case, the policy impact on female incentives to borrow could be underestimated. To verify this concern, we track public attention toward the two-child policy in general and its reform by exploiting the Baidu Search Volume Index, which measures the search volume of specific keywords on Baidu. Figure 1 displays the daily index from June 2015 to January 2016. We find that the first significant spike in public discussions surrounding the policy reform occurred in July 2015. This pattern remains consistent across various keywords, including the Chinese equivalents of "the two-child policy" and "the universal two-child policy." Together with the survey evidence mentioned in the Introduction, these findings suggest that female college students may adjust their expectations regarding the future employment environment affected by the new birth control policy, and consequently alter their borrowing behaviors even before the national implementation in 2016.

Therefore, we further examine whether there was a decline in loan applications from

female students relative to their male counterparts during the period of information leakage in 2015. Column (2) of Table 2 presents the results of the effect on loan applications in two distinct periods: from August to December 2015 and after January 2016. The findings indicate that apart from the implementation period starting in 2016, a significant reduction in female applications is also documented during the leakage period between August and December 2015.[19] On average, the anticipation of a relaxed birth control policy corresponds to a relative decrease of 6.18% (=$e^{0.060}$-1) in loan applications from female college students. This effect is significantly different from the impact observed for female applicants following the formal implementation of the reform in January 2016, which results in a more substantial 15.6% (=$e^{0.145}$-1) drop in loan applications compared to the finding in Column (1). The difference between these two effects on female applicants in two distinct periods is also statistically significant, suggesting that female college students are responding gradually as the reform of the two-child policy unfolds. Therefore, we expand our definition of the treatment period to August 2015 in subsequent analyses to comprehensively capture the policy effect.

5.1.2 Parallel trend assumption

While the above results indicate significant differences in loan applications between female and male college students following the initial public attention to the new policy in July 2015, it is crucial to examine whether they have been behaving differently prior to this period. For this purpose, we test the gender difference between loan applicants in June 2015. Column (3) of Table 2 presents the result. The coefficient on the difference-in-differences

[19] Since the earliest two obvious spikes of public attention took place in the middle of July 2015, we exclude this month from the leakage period for a clearer assessment of the effect.

term is statistically insignificant, supporting the validity of the parallel trend assumption. There are no significant pre-trend differences between the treatment (female) and the control (male) group. Meanwhile, the point estimates indicate no significant differences in the effects on female college students before and during the leakage period.

5.1.3 Prevalence of the response

To gain a deeper understanding of the scope and nature of the effect, we examine whether the documented response by female students is driven by outliers. We study the distribution of the post-shock responses within the treatment group. Following the methodology of Gu, He, Qian, and Ren (2021), we estimate individual-level responses by calculating the change in the propensity to submit a loan application for each student. After accounting for time-invariant individual heterogeneity and common time trends, we compute the post-shock propensity change for each female student relative to male students.[20]

We plot the distribution of the post-shock response in the propensity to apply for a P2P loan among treated female students in Figure IA.1. Approximately 60% of this group displays a decrease in their propensity to apply following the policy shock in July 2015.[21] This finding suggests that the negative post-shock response among female students is prevalent and not solely driven by the extreme responses of a few individuals. Therefore, Figure IA.1 sharpens the interpretation of the documented effect. While some female students could be more likely to borrow and invest in their education in response to deteriorating

[20] Specifically, we first regress the monthly loan application dummy on individual fixed effects and school-specific time trends. The propensity to apply for a loan is defined as the residuals of the treatment group minus the same-month average of the residuals of the control group. We then compare the average propensities between the pre-shock and post-shock periods for each treated individual and plot the changes in propensity.

[21] In an unreported analysis, we further examine the distribution of post-shock propensity changes among female students who are repeated borrowers. We find the majority (58.7%) of treated students show a decrease in the propensity of loan application.

job prospects, the majority still decide to stop borrowing to avoid the debt burden.[22]

One might argue that female students, or college students in general, may not be able to fully anticipate how the recent relaxation of birth control could affect their future labor market outcomes, and thus adjust their current borrowing behavior accordingly. This concern is valid, particularly given that most college students have not yet entered the workforce or become parents. While it is impossible to assess the opinions of students in the loan sample, we use survey data collected from current college students. With this survey, we aim to provide valuable insights into how students in China perceive the potential impact of the relaxation of birth policies on labor market outcomes before they enter the job market.

For this purpose, we conducted a survey using Credamo, targeting full-time college students in China.[23] Our sample contains students from 438 schools across all provinces in mainland China except Qinghai and Tibet.[24] In the survey, students were asked to reflect on possible shifts in preferences and concerns of employers, as well as changes in the employment and income prospects for women relative to men following the recent relaxation of birth control policies. These questions allowed us to gauge college students' expectations of how labor market outcomes might change due to the new birth policies.[25]

[22]We also examine those treated female students who display an increase in borrowing propensity. Interestingly, we find that these students are more likely to come from elite universities in China. This pattern implies that either the future job prospects for these elite female students remain unaffected by the policy, or they perceive it as worthwhile to invest in their human capital to compensate for the diminished job prospects.

[23]Credamo, the Chinese equivalent of Amazon Mechanical Turk, is widely used by researchers in psychology, marketing, and management to collect survey data in China (e.g., Ding, Tu, Pu, and Qiu (2021); Gong, Lu, Schaubroeck, Li, Zhou, and Qian (2020); Xu, Yu, and Tu (2023)). The platform maintains a large and broadly representative respondent pool of more than three million registered adults, about 30% of whom are students. As such, Credamo provides a well-suited setting for the implementation of our survey.

[24]This survey was designed and conducted in January 2026. Credamo distributed the survey to 700 individuals registered on the platform, ultimately yielding 691 valid responses. Of these, 42.8% of respondents were male. Summary statistics are presented in Table IA.11 in the Internet Appendix. An English version of the survey questions is presented in the Internet Appendix.

[25]Students in the survey sample are similar to those in the loan sample for two reasons. First, the survey sample covers students from all provinces in the loan sample except Qinghai, which only accounts for a small

Our findings reveal three key patterns in how students anticipate the labor market impacts of the new birth policies. First, from the perspective of employers, the majority of respondents expect increased concerns about birth-related labor costs (86.1%), as well as a stronger preference for hiring (72.1%) and promoting men (72.8%). Second, from the perspective of workers, respondents generally express a pessimistic outlook regarding women's post-policy job prospects (81.2%) and career development (79.6%). Similarly, a majority of respondents expect a more adverse situation for female workers in terms of future income (52.0%) and income uncertainty (66.0%). Finally, female students' responses are significantly and consistently more pronounced than those of male students in the above aspects. Together, these patterns suggest that college students do have a clear understanding of the potential labor market effects of the recent birth policies, with female students demonstrating a heightened awareness of the negative outcomes they may face. These findings provide robust support for our earlier results regarding the prevalent financial responses among female college students.

5.1.4 Demand or Supply?

A decline in applications from female students could be driven by changes in credit supply rather than demand. For example, the lenders and the platform may recognize the negative impact of the universal two-child policy on female college students' job opportunities, raising concerns about their creditworthiness. In response, the platform may employ stricter screening processes on female borrowers, which could discourage potential appli-

proportion of loan applicants. Meanwhile, the median age of our survey respondents is 21, which aligns with the median age of our P2P loan sample. This suggests that these students are likely to share similar concerns regarding future job prospects.

cants from seeking loans on the platform. To differentiate the supply and demand channels, we further investigate the approval and delinquency information on this platform.[26]

Panel A of Table 3 presents the result on loan approval. Instead of being discriminated against by lenders, female applicants are, to some extent, favored after the introduction of the universal two-child policy. The reform, on average, leads to a 3.4% increase in loan approval rate for female applicants relative to that for male applicants from the same college. This evidence appears against the supply side story.

However, even if the approval rate does not decrease, one may question whether lower-quality female borrowers have already been deterred by more stringent screening processes targeting female students in the first place. As a result, the approval rate for high-quality applicants does not decline. To further address this concern, we assess the loan performance of the successful borrowers and examine whether loans to female applicants are more likely to become delinquent after the policy reform. For a clearer comparison, we utilize two seven-month observation windows. Panel B of Table 3 presents the result. After the introduction of a relaxed birth control policy, we observe no significant differences in loan delinquency rates between female and male applicants. This is also the case when we use alternative observation windows for comparison, as shown in Table IA.1 in the Internet Appendix. Therefore, it appears that lenders are not implementing more stringent screening for female applicants after the introduction of the new policy. Our results are unlikely to be solely driven by credit supply channels.

[26]Note that the interest rate on MingXiaoDai is fixed at 0.99% per month. Therefore, we cannot use the variation in interest rates to differentiate between supply and demand effects.

5.2 Additional evidence from reforms of maternity leave

In this subsection, we link local maternity leave policies with college students' borrowing choices. Following the nationwide universal two-child policy implemented by the central government, provincial governments launched reforms of extending maternity leave successively in 2016 to further refine birth control policies and encourage population growth. This provides another setting to test the impact of expected negative labor market outcomes on loan applications.

Using local reforms of maternity leave provides three advantages. First, we can implement a staggered difference-in-differences test by exploiting the varying announcement dates of these reforms across provinces.[27] In contrast with our baseline regressions that use a universal cutoff for the national policy change, the variation in timing mitigates confounding effects from any national time-series shocks that may coincide with the universal two-child policy.

Second, extending maternity leave would directly lower the workload of pregnant employees and thus increase production costs for employers and firms hiring female workers. This could in turn lead to additional disadvantages for female job seekers. Anticipating this potential outcome of a more competitive job market, female college students might choose to reduce their loan burden and insolvency risks by decreasing their loan applications before entering the workforce. Therefore, if female students indeed apply for fewer loans following local maternity leave reforms, this would provide strong and consistent support

[27]The conclusion remains similar when employing a stacked difference-in-differences approach instead, as shown in Table IA.3 in the Internet Appendix. In the stacked difference-in-differences approach, for each event, the control group includes provinces that have not announced the maternity leave reform before the event. Our results are also robust to using implementation dates instead of announcement dates. As shown in the Internet Appendix, these two dates are very close in most provinces.

for our proposed channel.

Finally, in this series of tests, we can examine loan applications from male students separately. While our previous results focus on the relative comparison between female and male students, this allows us to investigate whether the documented relative decrease in female students' credit demand is attributed to the increase in borrowing among male students.

Table 4 presents the results. Female college students are significantly more reluctant to borrow after the extension of maternity leave by provincial governments. For example, the extension of maternity leave, on average, leads to a 3.4% decrease in loan applications from female students relative to their male schoolmates in the first month (30 days) after the change. The effect continues to grow up to 13.7% in the first two months following the change, suggesting that female students take time to recognize the undesirable impact of the change on their future employment prospects. The effect remains significant and stronger than the initial magnitude even in the third month after the reform.[28]

Moreover, the effect of maternity leave reforms is not driven by changes in the behaviors of male applicants. As shown in Table IA.2 of the Internet Appendix, there are no significant changes in loan applications among male college students after the extension of maternity leave. Therefore, the evidence above suggests that female university students indeed rapidly learn about the fiercer competition in their future employment market resulting from the extended maternity leave and respond by reducing their borrowing. This supports our proposed channel of negative labor market implications for female students.

[28]To focus on the incremental effects of provincial maternity leave extensions, we drop events where the pre-event $[t-x]$ window covers January 1, 2016, the implementation date of the national Universal Two-Child Policy.

5.3 Mechanism

In this subsection, we provide evidence from different aspects of the proposed mechanism: due to concerns about job opportunities arising from labor market challenges after the relaxation of the birth control policy, female college students become less inclined to borrow. However, we do not rule out other possible coexisting channels that are not directly related to the labor market, such as those related to the marriage market or consumption and saving concerns.

5.3.1 Evidence from loan and applicant characteristics

We exploit the heterogeneity in loan and loan applicant characteristics. To this end, we change the dependent variable from the logged number of applications to the ratio of the number of specific types of loans to the total number of loan applications. Table 5 presents the result. Panel A of the table focuses on different purposes of borrowings. For example, the new birth control policy leads to, on average, a significant reduction of 3.1% in the proportion of loan applications aimed at human capital investment purposes for female students compared to their male schoolmates, while there is no significant difference in loans sought solely for consumption purposes.[29] This evidence implies that female students are less willing to prepare themselves for future competitions in job markets after the new birth control policy, as they anticipate the challenges may not justify further leveraged investments in their human capital.

Meanwhile, regarding borrowers' backgrounds, we find the discouraging effect on bor-

[29] In an unreported test, we assess the approval rates for loans intended for consumption versus human capital investment purposes. We do not see a change after the policy reform. This suggests that there is no incentive for applicants to switch purposes to secure easier approval.

rowing is relatively stronger for female loan applicants majoring in STEM (science, technology, engineering, and math) majors. As shown in Panel B of Table 5, the relaxation of the two-child policy is associated with a significant drop of 6.2% in the fraction of loan applications from female college students in STEM majors compared to their male schoolmates. Given the pervasive evidence of gender disparity in STEM industries in China and other countries (e.g., Rickne, 2010; Glass, Sassler, Levitte, and Michelmore, 2013; Committee on Equal Opportunities in Science and Engineering, 2015; Adams and Kirchmaier, 2016; Zhang, Jin, Li, and Wang, 2021), female students in STEM majors could be more concerned about wage rates and employment opportunities. Consequently, they would be more reluctant to borrow after introducing the universal two-child policy.

The results for loan duration and loan amount displayed in Panels C and D are consistent with the above findings. The policy reform significantly lowers the average application ratio of long-term loans (defined as loans lasting for 24 months or more) by 3.0% and that of large loans (defined as loans with an amount above the mean value) by 4.1% for female students relative to their male counterparts.[30] These results corroborate the finding of a stronger impact on borrowings for human capital investment because expenditures on human capital investment, such as tutorials and exams for vocational certificates or language proficiency, are usually larger and more sustained than consumption spending.

In addition, we explore the policy impact on college students' decisions regarding human capital investment, particularly their choices to attend graduate schools, a popular path for Chinese undergraduates. Using education statistics from the Ministry of Education, we

[30]Table IA.4 of the Internet Appendix shows that the results are robust to different cutoffs for the loan terms and loan amounts.

observe a sudden drop in female postgraduate enrollment ratios in 2017 at both national and provincial levels.[31] We highlight two noteworthy facts about this post-policy reduction in enrollment. First, this gender gap in responses is primarily attributed to changes in enrollment in master's degree programs. Second, the magnitude of the decline in female postgraduate enrollment ratios is positively correlated (ρ=0.3641 and significant at 10%) with the policy effect on loan applications from female college students across provinces (computed in Section 5.3.2). Thus, this geographic pattern further corroborates our findings regarding the discouraging effect of the two-child policy on human capital investment for female college students.

5.3.2 Evidence from economic opportunities

We test whether the baseline effect on female borrowing is intensified by higher levels of regional economic development. The intuition is that more developed areas attract more job seekers, resulting in more competitive job markets. Consequently, female college students in these regions would expect more difficulties in their future job searches after the introduction of the universal two-child policy. Therefore, we expect female students in more developed regions to be more dissuaded from borrowing after the policy reform.

We first interact the difference-in-differences term with province dummies. Figure 4 displays the results.[32] Our analysis reveals two geographical patterns. The effect on female borrowings is much stronger in coastal regions, which are usually more developed than inland regions. Stronger effects are also recorded for provinces located in the Bohai Bay

[31]The data are obtained from the website of the Ministry of Education, under the section "Basic Situation of the Region" (`http://en.moe.gov.cn/documents/statistics/2017/region/`).

[32]There are no observations from Taiwan in our raw sample. Jiangxi Province and Tibet Autonomous Region are excluded after we collapse the data to the university-month level as we require observations for each month during the sample period.

Economic Rim, the Yangtze River Delta Economic Zone, and the Pearl River Delta Economic Zone, the major economic hubs in China. These patterns of geographic distribution imply that female students in more developed regions are relatively more affected by the policy.

We continue to test the hypothesis using GDP data to identify the most developed regions. Given a potential non-linear effect of GDP, we construct dummy variables that take one for regions with GDP levels above different thresholds. We then interact these dummy variables with the difference-in-differences term. Panel A of Table 6 reports the results for these tests. The baseline effect on female borrowings is, on average, 9.5% (11.2%) stronger in provinces (cities) in the top decile relative to other provinces (cities) after the introduction of the universal two-child policy. The effect is, on average, 9.3% stronger in the top five provinces relative to others when sorted GDP. Although the signs of these coefficients are consistent with our hypothesis of a larger effect for developed areas and the coefficient is economically significant, the difference is statistically insignificant. This could be due to the coarse grouping of developed regions as there are still many cities in the group. Therefore, we refine the grouping of regions for larger contrast by applying a descending sorting of GDP at the city level. We find that the differential effect between the top ten cities and others is 22.8%, which is both economically and statistically significant.[33]

Furthermore, we employ the official definition of "Tier-1" and "Tier-2" cities for a more precise representation of developed cities. Panel B of Table 6 shows the results. Beijing and Shanghai, the two most developed cities in China, have a much stronger average policy

[33]We also rerun the test with indicator variables for other aspects of economic development, including GDP per capita, the ratio of the tertiary sector, disposable income, and consumption level. As shown in Table IA.5 of the Internet Appendix, the signs of coefficients are all negative and consistent despite statistical insignificance. We verify that the proxies are not highly correlated. This implies that they reflect different aspects of economic development.

effect on female college students relative to other cities. The difference in average policy effect is still large (43%) and significant when we compare all four Tier-1 cities with the remaining region. The inter-regional difference drops to 0.3% and becomes insignificant when we add 31 Tier-2 cities to the developed group for comparison. Overall, the difference in the policy effect between developed areas and the remaining places is robust across various measures of economic development.

5.3.3 Evidence from economic structure

We test the heterogeneous effects of economic structure. Specifically, we are interested in the degree of market orientation of the local economy. Economic development may not fully reflect the competitiveness of local employment markets since government intervention and state involvement can also enhance short-term production. In such scenarios, female students in developed cities could still be less concerned about their future employment as competition is likely to be milder in a planned economy. The underlying assumption is that production efficiency is generally more prioritized in market-oriented economies..

To this end, we exploit variations in the size of the state-owned sector. We calculate the ratio of urban employment in the state-owned sector, using all three available subcategories of state-involved units, to total urban employment. We define an indicator variable taking one if the provincial ratio is larger than the cross-sectional median and interact it with the difference-in-differences term. The results are presented in Table 7. Column (1) uses the full sample. The average policy effect on female students is reduced by 16.2% in cities located in provinces with a large state-owned sector in terms of urban employment.[34]

[34]Narrowing the definition of the state-owned sector to include only state-owned units produces similar results, as shown in Table IA.6 of the Internet Appendix. Furthermore, we rerun the test with indicator

The magnitude is both economically and statistically significant. This finding suggests that female students are less reluctant to borrow following the policy shock in regions that have less market-oriented competition in local urban employment.

To ensure that this result does not capture the same effect of economic development, we rerun the test with different sub-samples. Since developed regions like Beijing and Shanghai also, to some extent, exhibit strong state involvement in the industrial sector, we gradually exclude observations from Tier-1 cities in the sample. As shown in Columns (2) to (4) in Table 7, the reduction in the average treatment effect for regions with the larger state-owned sector in local urban employment is robust across different sub-samples. The economic magnitude varies from 10.8% to 16.2% with robust statistical significance.

5.3.4 Expectations of policy effectiveness

Given that the one-child policy included several initial exemptions and has seen partial relaxations since 1984, there could be variations in the effectiveness of the universal two-child policy in promoting fertility.[35] The uneven implementation of the one-child policy could result in differing impacts across regions from the subsequent shift to a universal two-child policy. Both employers and employees may anticipate the potential outcomes of the policy change, and the impact on female borrowing may depend on the stringency of the previous birth control measures.

variables for the state-owned sector of urban female employment. Similar policy effects are found in Table IA.6, implying the stability of state involvement in both female employment and total employment in urban job markets.

[35]The one-child policy had originally exempted some people like ethnic minorities from its restrictions. Several notable reforms of the policy have occurred over the years. For example, rural households with only one daughter were allowed to have two children under the "one-and-a-half-child" policy in 1984. The increased birth quota was also applied to urban couples under the "two only-child two children" policy in 2002, provided both parents met the only-child requirement within their own families. This condition on the parents was further relaxed by the "selective two-child" policy in 2013.

As such, we exploit regional variations in the binding effect of the one-child policy. We analyze the historical demographic composition of each province and construct proxies based on the proportions of two exempted population groups: ethnic minorities and rural households. Provinces with a higher ratio of these groups are classified as less restricted regions, where we would expect a smaller increase in fertility rates after the universal two-child policy. We explore the heterogeneity of the baseline effect from this perspective.

Results are reported in Table IA.7 of the Internet Appendix. We find a weaker policy effect on female loan applications in provinces with a larger minority population from 1982 to 2010. This pattern is robust across different thresholds used to define the indicator, as well as when employing an alternative proxy based on agricultural household registration. These results support the mechanism wherein pre-shock expectations regarding the policy's effectiveness shape loan application patterns of female students across different regions.

5.3.5 Realization of policy effectiveness

We now turn to the policy's realized impact on fertility. If the new policy proves more effective at increasing birth rates in certain regions, employers in those areas may face higher birth-related labor costs, thereby exacerbating adverse labor market prospects for women. Therefore, we hypothesize a larger decline in female loan applications in regions that experienced greater post-policy increases in fertility.

We compute changes in birth rates at the city level to measure the effectiveness of the universal two-child policy. Specifically, we compare the mean birth rates of various post-shock periods with the 2015 level. Then, we normalize the gaps by the pre-shock (2010–2015) average to measure the relative increase in fertility. We also use the average birth

rates before the selective two-child policy (2010–2013) as an alternative scale. Lastly, we classify the cities of colleges in the loan sample by the above measures to capture cross-sectional variations of realized policy effectiveness.

In Table IA.8 of the Internet Appendix, we find a significantly larger reduction in loan applications among female students in cities with stronger fertility responses after the universal two-child policy. This heterogeneous effect remains robust when we use longer post-policy periods or alternative normalization windows to measure relative changes in birth rate. Therefore, these findings suggest that female students consistently interpret the realized effect of the new birth policy and adjust their financial decisions accordingly.

5.3.6 The role of social norms

We offer insights into how social norms may have influenced the borrowing decisions of female college students. Their responses to potential changes in future job prospects should depend on their perceptions of gender discrimination, which are intuitively shaped by their background and beliefs on gender inequality. Based on this hypothesis, we study the heterogeneous effects of son preference, a deeply entrenched social norm in many Chinese families. Specifically, we use sex ratios at birth in students' hometowns to measure the prevalence of this social norm in their background.[36] The assumption is that a common practice of son preference, indicated by an abnormally high sex ratio at birth, would shape daughters' beliefs and make them more aware of gender discrimination. Hence, they would be more sensitive when interpreting the policy consequences on the gender income gap,

[36]The sex ratio at birth is approximately 106 boys for every 100 girls in China. Distortions to this balanced sex ratio often arise from interventions such as sex-selective abortions and under-reporting, leading to the problem of "missing women," first proposed by Sen (1992). Numerous studies have linked this phenomenon in China with the one-child policy (e.g., Ebenstein (2010); Chen, Li, and Meng (2013)).

regardless of whether they are returning to their hometowns or not after graduation.

In Table IA.9 of the Internet Appendix, we classify the sample based on sex ratios at birth in students' residence provinces. Mean sex ratios are computed between 1982 and 2010 to capture the long-standing social norm among the local population. We then re-run the baseline regression in each sub-sample to decompose the policy effect on female borrowings. As shown in Panel A, our baseline effect is mostly driven by female students from high-sex-ratio provinces. The difference in effects between students from low-sex-ratio and high-sex-ratio provinces is strongly significant. Furthermore, results in Panels B and C, where we use sex ratios based on different birth orders to more accurately capture the degree of son preference, highlight the robustness of this pattern. These findings imply a crucial role of social norms in shaping female college students' choice of loan applications.

5.3.7 Alternative mechanism: internal resource competition

An alternative potential mechanism involves female students' concerns about increased competition for internal family resources. Specifically, anticipating the arrival of a second child in the parents' family, female students may worry about receiving less financial support from parents, leading them to reduce their borrowing to avoid accumulating debt burden. While the competition for limited family resources could impact both male and female students, this concern may be more pronounced for female students, as there is a common preference for sons in Chinese families, which could encourage parents of female students to have a second child, potentially diverting resources away from their daughters.

To address this concern, we explore the heterogeneity of the baseline effect based on actual fertility responses to the policy change in students' residence provinces. If female

students are concerned about internal resources, we should observe a stronger policy effect for those whose hometown provinces experience larger increases in childbearing. Table IA.10 displays the results. We find no significant differences in the baseline effect between female students from home provinces with large versus small increases in birth rates.[37]

6 Conclusion

The salary gap between males and females is often used as a measure of gender inequality. China switched from a one-child policy to a two-child policy in 2016, which increased working mothers' burden and employability difficulties for female job seekers. We show evidence that female university students, under the new policy, react to labor market conditions and borrow less, relative to their male counterparts. Loan applications from female students also drop after local provincial governments extended maternity leave in a staggered manner. More developed and market-oriented regions, as well as students who originate from provinces that display a stronger son preference, exhibit stronger results.

We find that the decrease in borrowing among women after the introduction of the two-child policy is at least partly attributable to their reduced investment in human capital. Therefore, the gender pay gap may be widened after the reform due to young women's self-initiated response to the anticipated drop in future employability. As China further removed all family size limits in 2021, policies that make the work environment more family-friendly and reduce the gender gap in the job market are desirable. These policies should lower the motherhood wage penalty and encourage women to invest in human capital.

[37] This result is robust if we narrow our analysis to birth rates from women aged between 35 and 49, since they are more representative of mothers of college students.

References

Adams, Renée B, and Patricia Funk, 2012, Beyond the glass ceiling: Does gender matter?, *Management Science* 58, 219–235.

Adams, Renée B, and Tom Kirchmaier, 2016, Women on boards in finance and STEM industries, *American Economic Review* 106, 277–81.

Agarwal, Sumit, Keyang Li, Yu Qin, and Jing Wu, 2022, The impact of fertility relaxation on gender wage gap, *Available at SSRN 3507515*.

Aisenbrey, Silke, Marie Evertsson, and Daniela Grunow, 2009, Is there a career penalty for mothers' time out? a comparison of germany, sweden and the united states, *Social Forces* 88, 573–605.

Altonji, Joseph G, and Rebecca M Blank, 1999, Race and gender in the labor market, *Handbook of Labor Economics* 3, 3143–3259.

Anderson, Deborah J, Melissa Binder, and Kate Krause, 2002, The motherhood wage penalty: Which mothers pay it and why?, *American Economic Review* 92, 354–358.

———, 2003, The motherhood wage penalty revisited: Experience, heterogeneity, work effort, and work-schedule flexibility, *ILR Review* 56, 273–294.

Atkinson, Stanley M, Samantha Boyce Baird, and Melissa B Frye, 2003, Do female mutual fund managers manage differently?, *Journal of Financial Research* 26, 1–18.

Barasinska, Nataliya, and Dorothea Schäfer, 2014, Is crowdfunding different? evidence on the relation between gender and funding success from a german peer-to-peer lending platform, *German Economic Review* 15, 436–452.

Barber, Brad M, Wei Jiang, Adair Morse, Manju Puri, Heather Tookes, and Ingrid M Werner, 2021, What explains differences in finance research productivity during the pandemic?, *The Journal of Finance* 76, 1655–1697.

Barber, Brad M, and Terrance Odean, 2001, Boys will be boys: Gender, overconfidence, and common stock investment, *The Quarterly Journal of Economics* 116, 261–292.

Baum, Charles L, 2002, The effect of work interruptions on women's wages, *Labour* 16, 1–37.

Becker, Gary, 1964, Human capital: A theoretical and empirical analysis with special reference to education, first edition, Discussion paper National Bureau of Economic Research, Inc.

———, 1994, Human capital: A theoretical and empirical analysis with special reference to education, third edition, Discussion paper National Bureau of Economic Research.

Becker, Sascha O, Ana Fernandes, and Doris Weichselbaumer, 2019, Discrimination in hiring based on potential and realized fertility: Evidence from a large-scale field experiment, *Labour Economics* 59, 139–152.

Bertrand, Marianne, Claudia Goldin, and Lawrence F Katz, 2010, Dynamics of the gender gap for young professionals in the financial and corporate sectors, *American Economic Journal: Applied Economics* 2, 228–55.

Blau, Francine D, and Lawrence M Kahn, 2000, Gender differences in pay, *Journal of Economic Perspectives* 14, 75–99.

——— , 2017, The gender wage gap: Extent, trends, and explanations, *Journal of Economic Literature* 55, 789–865.

Booth, Alison, and Andrew Leigh, 2010, Do employers discriminate by gender? a field experiment in female-dominated occupations, *Economics Letters* 107, 236–238.

Budig, Michelle J, and Paula England, 2001, The wage penalty for motherhood, *American Sociological Review* pp. 204–225.

Chen, Xiao, Bihong Huang, and Dezhu Ye, 2020, Gender gap in peer-to-peer lending: Evidence from China, *Journal of Banking & Finance* 112, 105633.

Chen, Yuyu, Hongbin Li, and Lingsheng Meng, 2013, Prenatal sex selection and missing girls in China: Evidence from the diffusion of diagnostic ultrasound, *Journal of Human Resources* 48, 36–70.

Committee on Equal Opportunities in Science and Engineering, 2015, Broadening participation in America's STEM workforce (2013–2014 Biennial Report to Congress).

Correll, Shelley J, Stephen Benard, and In Paik, 2007, Getting a job: Is there a motherhood penalty?, *American Journal of Sociology* 112, 1297–1338.

D'Acunto, Francesco, Pulak Ghosh, and Alberto G Rossi, 2022, How costly are cultural biases? evidence from fintech, .

Ding, Ying, Yanping Tu, Jingchuan Pu, and Liangfei Qiu, 2021, Environmental factors in operations management: The impact of air quality on product demand, *Production and Operations Management* 30, 2910–2924.

Dominitz, Jeff, and Charles F Manski, 1997, Using expectations data to study subjective income expectations, *Journal of the American Statistical Association* 92, 855–867.

Duarte, Jefferson, Stephan Siegel, and Lance Young, 2012, Trust and credit: The role of appearance in peer-to-peer lending, *The Review of Financial Studies* 25, 2455–2484.

Ebenstein, Avraham, 2010, The "missing girls" of China and the unintended consequences of the one child policy, *Journal of Human Resources* 45, 87–115.

Egan, Mark, Gregor Matvos, and Amit Seru, 2022, When harry fired sally: The double standard in punishing misconduct, *Journal of Political Economy* 130, 1184–1248.

Fuchs, Victor R, 1989, Women's quest for economic equality, *Journal of Economic Perspectives* 3, 25–41.

Glass, Jennifer L, Sharon Sassler, Yael Levitte, and Katherine M Michelmore, 2013, What's so special about STEM? a comparison of women's retention in STEM and professional occupations, *Social Forces* 92, 723–756.

Goldin, Claudia, and Cecilia Rouse, 2000, Orchestrating impartiality: The impact of" blind" auditions on female musicians, *American Economic Review* 90, 715–741.

Goldsmith-Pinkham, Paul, and Kelly Shue, 2020, The gender gap in housing returns, Discussion paper National Bureau of Economic Research.

Gong, Shiyang, Jackson G Lu, John M Schaubroeck, Qian Li, Qiwei Zhou, and Xiaoye Qian, 2020, Polluted psyche: is the effect of air pollution on unethical behavior more physiological or psychological?, *Psychological science* 31, 1040–1047.

Gu, Quanlin, Jia He, Wenlan Qian, and Yuan Ren, 2021, Housing booms and shirking, *Available at SSRN 3189933*.

He, Haoran, Sherry Xin Li, and Yuling Han, 2023, Labor market discrimination against family responsibilities: A correspondence study with policy change in China, *Journal of Labor Economics* 41, 361–387.

Huang, Wei, Xiaoyan Lei, and Ang Sun, 2021, Fertility restrictions and life cycle outcomes: Evidence from the one-child policy in China, *The Review of Economics and Statistics* 103, 694–710.

Kleven, Henrik, Camille Landais, and Gabriel Leite-Mariante, 2024, The child penalty atlas, *Review of Economic Studies* p. rdae104.

Kuziemko, Ilyana, Jessica Pan, Jenny Shen, and Ebonya Washington, 2020, The mommy effect: Do women anticipate the employment effects of motherhood?, Discussion paper National Bureau of Economic Research.

Lin, Mingfeng, Nagpurnanand R Prabhala, and Siva Viswanathan, 2013, Judging borrowers by the company they keep: Friendship networks and information asymmetry in online peer-to-peer lending, *Management Science* 59, 17–35.

Lin, Mingfeng, and Siva Viswanathan, 2016, Home bias in online investments: An empirical study of an online crowdfunding market, *Management Science* 62, 1393–1414.

Liu, Jun, and Taoxiong Liu, 2020, Two-child policy, gender income and fertility choice in China, *International Review of Economics & Finance* 69, 1071–1081.

Neumark, David, Roy J Bank, and Kyle D Van Nort, 1996, Sex discrimination in restaurant hiring: An audit study, *The Quarterly Journal of Economics* 111, 915–941.

Niessen-Ruenzi, Alexandra, and Stefan Ruenzi, 2019, Sex matters: Gender bias in the mutual fund industry, *Management Science* 65, 3001–3025.

Patnaik, Arpita, Joanna Venator, Matthew Wiswall, and Basit Zafar, 2022, The role of heterogeneous risk preferences, discount rates, and earnings expectations in college major choice, *Journal of Econometrics* 231, 98–122.

Pope, Devin G, and Justin R Sydnor, 2011, What's in a picture? Evidence of discrimination from Prosper. com, *Journal of Human Resources* 46, 53–92.

Rickne, Johanna, 2010, Gender, wages and social security in China's industrial sector, Discussion paper Working Paper.

Sen, Amartya, 1992, Missing women, *BMJ: British Medical Journal* 304, 587.

Sunden, Annika E, and Brian J Surette, 1998, Gender differences in the allocation of assets in retirement savings plans, *American Economic Review* 88, 207–211.

Waldfogel, Jane, 1998, Understanding the" family gap" in pay for women with children, *Journal of Economic Perspectives* 12, 137–156.

Wei, Shang-Jin, and Xiaobo Zhang, 2011, The competitive saving motive: Evidence from rising sex ratios and savings rates in China, *Journal of Political Economy* 119, 511–564.

Xu, Minzhe, Zhihao Yu, and Yanping Tu, 2023, I will get a reward, too: when disclosing the referrer reward increases referring, *Journal of Marketing Research* 60, 355–370.

Yang, Hui, 2022, Research on the burden of childbirth costs paid by enterprises and its countermeasures under the three-child policy: An analysis based on the extension of maternity leave, *Population & Economics* 255, 17–31.

Zafar, Basit, 2011, How do college students form expectations?, *Journal of Labor Economics* 29, 301–348.

——— , 2013, College major choice and the gender gap, *Journal of Human Resources* 48, 545–595.

Zhang, Jian, Songqing Jin, Tao Li, and Haigang Wang, 2021, Gender discrimination in China: experimental evidence from the job market for college graduates, *Journal of Comparative Economics* 49, 819–835.

Table 1. **Descriptive Statistics**

This table provides descriptive statistics for student applicants from all university-gender groups and male groups versus female groups. Student applicants are separated based on their gender. *Total Number of Applications* is the sum of the number of applications received from students in the same university-gender group. *Total Loan Amount* is the sum of nominal values of the loan amount applied by students in the same group. *Fraction: Purpose = Human Capital Investment* is the ratio of loans applied for human capital investment purposes to total loan applications. *Fraction: Purpose = Consumption* is the ratio of loans applied for consumption purposes to total loan applications. *Fraction: STEM Majors* is the ratio of loans applied by students with STEM majors to total loan applications. *Fraction: Repayment Period* ≥ 24 *Months* is the ratio of loan applications which have a repayment period of 24 or 36 months to total loan applications. *Fraction: Loan Amount* > 6440 is the ratio of loan applications with a loan amount larger than 6,440 (mean) to total loan applications. *Fraction: Application Approved* is the ratio of approved loan applications to total loan applications. p1, p10, p50, p90, and p99 denote the value of 1-, 10-, 50-, 90-, and 99-th percentile.

	Total		Male		Female		Differences		p1	p10	p50	p90	p99
	N	Mean	N	Mean	N	Mean	Mean	t-statistics					
Total Number of Applications	21,605	32.3	15,950	36.3	5,655	20.9	15.4	36.7***	1	4	23	71	161
Total Loan Amount	21,602	254474.8	15,949	284860.2	5,653	168747.2	116113	32.4***	2500	24400	175200	567200	1323800
Fraction: Purpose = Human Capital Investment	21,602	0.490	15,949	0.481	5,653	0.514	-0.033	-9.9***	0	0.273	0.479	0.75	1
Fraction: Purpose = Consumption	21,602	0.222	15,949	0.232	5,653	0.193	0.038	14.0***	0	0	0.2	0.4	1
Fraction: STEM Majors	21,602	0.140	15,949	0.170	5,653	0.055	0.115	59.3***	0	0	0.089	0.375	0.667
Fraction: Repayment Period $\geq$ 24 Months	21,602	0.515	15,949	0.506	5,653	0.539	-0.033	-9.3***	0	0.271	0.5	0.8	1
Fraction: Loan Amount $>$ 6440	21,602	0.487	15,949	0.483	5,653	0.498	-0.015	-4.4***	0	0.255	0.481	0.734	1
Fraction: Application Approved	21,602	0.588	15,949	0.583	5,653	0.603	-0.020	-6.9***	0	0.406	0.574	0.8	1

Table 2. **The Effect of the Universal Two-child Policy on Loan Applications**

This table shows the effect of the universal two-child policy on loan applications from university students. *Log(Number of Applications)* is the log of the total number of loan applications. *Post*$_{t\geq 201601}$ is an indicator taking one for months since the national implementation of the universal two-child policy on 1 January 2016. *Period*$_{t=201508\text{-}12}$ is an indicator taking one for the period between August 2015 and December 2015. *Period*$_{t=201506}$ is an indicator taking one for June 2015. *Female* is an indicator taking one for female applicants. Standard errors are clustered by city. β_1, β_2, and β_3 are OLS regression coefficients of three interaction terms respectively. Point estimates of differences between these coefficients are shown in the table. Standard errors are in parentheses. ***, **, * indicate significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)
Dep. Var	Log(Number of Applications)		
Post$_{t\geq 201601}$ × Female	-0.120***	-0.145***	-0.152***
	(0.028)	(0.036)	(0.039)
Period$_{t=201508\text{-}12}$ × Female		-0.060**	-0.067**
		(0.030)	(0.032)
Period$_{t=201506}$ × Female			-0.051
			(0.033)
$\beta_1 - \beta_2$		*-0.085****	*-0.085****
		(0.022)	*(0.022)*
$\beta_2 - \beta_3$			*-0.017*
			(0.033)
Adj. R^2	0.895	0.895	0.895
Observations	21,605	21,605	21,605
University × Gender Fixed effects	Yes	Yes	Yes
City × Year-month Fixed effects	Yes	Yes	Yes
Clustered	City	City	City

Table 3. **The Effect of the Universal Two-child Policy on Loan Approval and Delinquency**

This table shows the effect of the universal two-child policy on loan approval (Panel A) and loan delinquency (Panel B). In Panel A, we use the full sample period to test the policy effect on loan approval. In Panel B, we use observations in two 7-month windows around August 2015 to test the policy effect on loan delinquency. Specifically, We compare loans approved and ended between January and July 2015 with those between August 2015 and February 2016. *Fraction of Total Applications* is the ratio of the number of approved loan applications to the number of total loan applications. *Delinquency* is an indicator taking one for loans with records of default. *Post*$_{t\geq 201508}$ is an indicator taking one for months since August 2015. *Female* is an indicator taking one for female applicants. Loan controls are dummy variables for loan purposes, loan terms, and loan amounts. Borrower controls are dummy variables for age, grades, majors, and family income levels of loan applicants. Standard errors are clustered by city. Standard errors are in parentheses. ***, **, * indicate significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Loan Approval	
Dep. Var	Fraction of Total Applications
Post$_{t\geq 201508}$ × Female	0.034***
	(0.010)
Adj. R^2	0.209
Observations	21,602
University × Gender Fixed effects	Yes
City × Year-month Fixed effects	Yes
Clustered	City
Panel B: Loan Delinquency	
Dep. Var	Delinquency
Post$_{t\geq 201508}$ × Female	0.002
	(0.042)
Adj. R^2	-0.032
Observations	4,079
Loan Controls	Yes
Borrower Controls	Yes
University × Gender Fixed effects	Yes
City × Year-month Fixed effects	Yes
Clustered	City

Table 4. **The Effect of Provincial Reforms of Maternity Leave on Loan Applications, Using Staggered DiD**

This table shows the effect of provincial reforms of maternity leave on loan applications using the staggered difference-in-difference approach. Following the new birth policy in 2015, provinces across China have amended to regulations on population and family planning to extend the length of maternity leave. We thus test the effect by comparing situations of loan applications before and after provincial reforms of maternity leave. Three observation windows of 30, 60, or 90 days are used for both periods before and after the announcement of provincial amendments, respectively. We exclude the events that contain observations in 2015 to capture the pure effect of extended maternity leave. *Log(Number of Applications)* is the log of the total number of loan applications. *Post*$_{t,t+29}$, *Post*$_{t,t+59}$, and *Post*$_{t,t+89}$ are indicators taking one for 30, 60, and 90 days since the announcement of provincial amendments, respectively. *Female* is an indicator taking one for female applicants. Standard errors are clustered by city. Standard errors are in parentheses. ***, **, * indicate significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)
Dep. Var	Log(Number of Applications)		
Post$_{t,t+29}$ × Female	-0.034***		
	(0.010)		
Post$_{t,t+59}$ × Female		-0.137***	
		(0.015)	
Post$_{t,t+89}$ × Female			-0.144***
			(0.016)
Adj. R^2	0.588	0.564	0.568
Observations	48,108	95,538	143,709
University × Gender Fixed effects	Yes	Yes	Yes
Year-month-day Fixed effects	Yes	Yes	Yes
Clustered	City	City	City

Table 5. **Heterogeneous Effect of the Universal Two-child Policy on Loan Applications: Loan Characteristics**

This table shows the heterogeneous effect of the universal two-child policy on loan applications, depending on loan characteristics. Specifically, we test for the heterogeneous effect of the policy depending on purposes of borrowing (Panel A), majors of applicants (Panel B), loan term (Panel C), and loan amount (Panel D). *Fraction of Total Applications* is the ratio of the number of the specific type of loan applications to the number of total loan applications. $Post_{t\geq 201508}$ is an indicator taking one for months since August 2015. *Female* is an indicator taking one for female applicants. Standard errors are clustered by city. Standard errors are in parentheses. ***, **, * indicate significance at the 1%, 5%, and 10% levels, respectively.

Dep. Var	Fraction of Total Applications
Panel A.1: Purpose = Human Capital Investment	
$Post_{t\geq 201508} \times$ Female	-0.031***
	(0.011)
Adj. R^2	0.242
Panel A.2: Purpose = Consumption	
$Post_{t\geq 201508} \times$ Female	0.001
	(0.009)
Adj. R^2	0.185
Panel B: STEM Majors	
$Post_{t\geq 201508} \times$ Female	-0.062***
	(0.006)
Adj. R^2	0.592
Panel C: Long Term	
$Post_{t\geq 201508} \times$ Female	-0.030***
	(0.011)
Adj. R^2	0.361
Panel D: Large Amount	
$Post_{t\geq 201508} \times$ Female	-0.041***
	(0.012)
Adj. R^2	0.247
Observations	21,602
University $\times$ Gender Fixed effects	Yes
City $\times$ Year-month Fixed effects	Yes
Clustered	City

Table 6. **Heterogeneous Effect of the Universal Two-child Policy on Loan Applications: Economic Opportunities**

This table shows the heterogeneous effect of the universal two-child policy on loan applications, depending on economic opportunities. Specifically, we interact the difference-in-difference term with different proxies of regional economic development. In Panel A, we construct dummy variables based on the annual GDP values of provinces and cities in the previous calendar year of loan applications. $GDP_{province,top\,decile}$ is an indicator taking one if the provincial GDP falls into the 10th decile in the cross-section. $GDP_{city,top\,decile}$ is an indicator taking one if the city GDP falls into the 10th decile in the cross-section. $GDP_{province,top\,5}$ is an indicator taking one if the province is ranked in the top 5 from a descending sorting of GDP in the cross-section. $GDP_{city,top\,10}$ is an indicator taking one if the city is ranked in the top 10 from a descending sorting of GDP in the cross-section. Data on regional GDP are from China Statistical Yearbooks and Provincial Statistical Yearbooks. In Panel B, we construct dummy variables to indicate major cities in China. *Beijing* is an indicator taking one if the applicant's university is located in Beijing. *Beijing&Shanghai* is an indicator taking one if the applicant's university is located in Beijing or Shanghai. *Tier-1 Cities* is an indicator taking one if the applicant's university is located in Tier-1 cities. *Tier-1&2 Cities* is an indicator taking one if the applicant's university is located in Tier-1 cities or Tier-2 cities. The classification of major cities follows the definition used in the Residential Property Price Index published by the National Bureau of Statistics of China. Tier-1 cities refer to Beijing, Shanghai, Guangzhou, and Shenzhen. Tier-2 cities refer to a total of 31 cities including capital cities and sub-provincial cities of all provinces and autonomous regions, except the first-tier cities. *Log(Number of Applications)* is the log of the total number of loan applications. $Post_{t\geq 201508}$ is an indicator taking one for months since August 2015. *Female* is an indicator taking one for female applicants. Standard errors are clustered by city. Standard errors are in parentheses. ***, **, * indicate significance at the 1%, 5%, and 10% levels, respectively.

Panel A: GDP				
	(1)	(2)	(3)	(4)
Dep. Var	Log(Number of Applications)			
$Post_{t\geq 201508}$ × Female	-0.117***	-0.087***	-0.112***	-0.085***
	(0.036)	(0.027)	(0.038)	(0.023)
$Post_{t\geq 201508}$ × Female × $GDP_{province,top\,decile}$	-0.095			
	(0.081)			
$Post_{t\geq 201508}$ × Female × $GDP_{city,top\,decile}$		-0.112		
		(0.077)		
$Post_{t\geq 201508}$ × Female × $GDP_{province,top\,5}$			-0.093	
			(0.060)	
$Post_{t\geq 201508}$ × Female × $GDP_{city,top\,10}$				-0.228*
				(0.123)
Adj. R^2	0.894	0.895	0.894	0.895
Observations	21,605	21,605	21,605	21,605
Panel B: Major Cities				
	(1)	(2)	(3)	(4)
Dep. Var	Log(Number of Applications)			
$Post_{t\geq 201508}$ × Female	-0.124***	-0.097***	-0.097***	-0.123***
	(0.034)	(0.022)	(0.022)	(0.036)
$Post_{t\geq 201508}$ × Female × Beijing	-0.089**			
	(0.034)			
$Post_{t\geq 201508}$ × Female × Beijing&Shanghai		-0.536**		
		(0.222)		
$Post_{t\geq 201508}$ × Female × Tier-1 Cities			-0.430*	
			(0.22)	
$Post_{t\geq 201508}$ × Female × Tier-1&2 Cities				-0.003
				(0.058)
Adj. R^2	0.894	0.895	0.895	0.894
Observations	21,605	21,605	21,605	21,605
University × Gender Fixed effects	Yes	Yes	Yes	Yes
City × Year-month Fixed effects	Yes	Yes	Yes	Yes
Clustered	City	City	City	City

Table 7. **Heterogeneous Effect of the Universal Two-child Policy on Loan Applications: Economic Structure**

This table shows the heterogeneous effect of the universal two-child policy on loan applications, depending on economic structure. Specifically, we interact the difference-in-difference term with a proxy of regional economic structure in terms of urban employment. *Log(Number of Applications)* is the log of the total number of loan applications. $Post_{t\geq 201508}$ is an indicator taking one for months since August 2015. *Female* is an indicator taking one for female applicants. We compute the dummy variable for economic structure using provincial annual values in the previous calendar year of loan applications. *Large State-owned Sector* is an indicator taking one if the ratio of urban employment in state-owned units, state jointly-run enterprises, and sole state-owned companies to total urban unit employment is higher than the median across provinces. Data on urban employment is from China Labour Statistical Yearbooks. Column (1) shows test results using the full sample, while Column (2) to Column (4) shows test results using sub-samples in which observations from major cities are excluded. The classification of major cities follows the definition used in the Residential Property Price Index published by the National Bureau of Statistics of China. First-tier cities refer to Beijing, Shanghai, Guangzhou and Shenzhen. Standard errors are clustered by city. Standard errors are in parentheses. ***, **, * indicate significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)	(4)
Dep. Var	Log(Number of Applications)			
	Full Sample	Beijing Excluded	Beijing & Shanghai Excluded	First-tier Cities Excluded
$Post_{t\geq 201508} \times$ Female	-0.211***	-0.211***	-0.156***	-0.160***
	(0.054)	(0.057)	(0.026)	(0.026)
$Post_{t\geq 201508} \times$ Female $\times$ Large State-owned Sector	0.162***	0.162**	0.108***	0.111***
	(0.061)	(0.063)	(0.038)	(0.039)
Adj. R^2	0.895	0.895	0.897	0.898
Observations	21,605	21,054	20,445	19,894
University $\times$ Gender Fixed effects	Yes	Yes	Yes	Yes
City $\times$ Year-month Fixed effects	Yes	Yes	Yes	Yes
Clustered	City	City	City	City

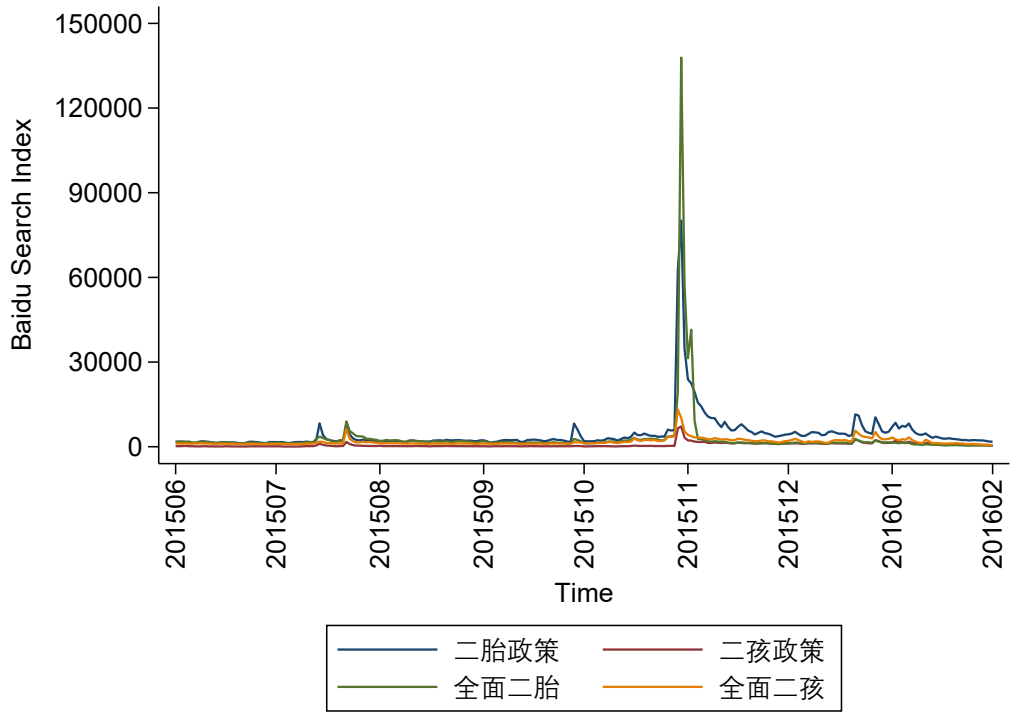


Figure 1. **Baidu Index: 2015.06-2016.01**

This figure displays the trend of online search volume for different keywords related to the universal two-child policy between June 2015 and January 2016. The search volume is captured by the Baidu Index offered by Baidu which is the predominant search engine in China.

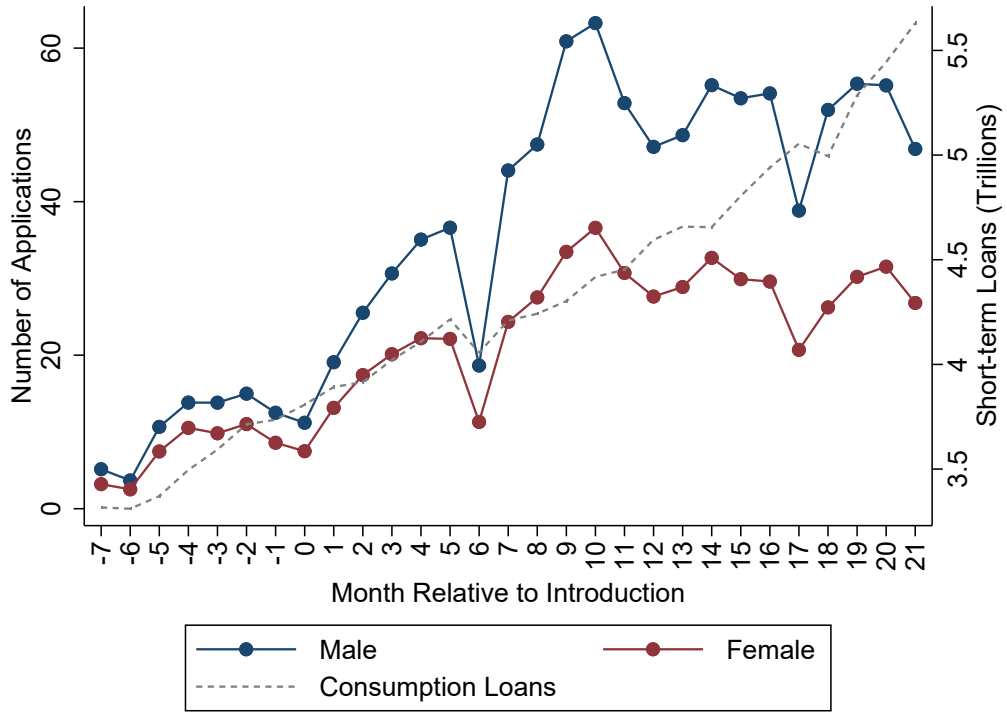


Figure 2. **Average Number of Loan Applications: Gender Comparison**

This figure displays the gender comparison for the monthly average number of loan applications across universities between January 2015 and May 2017. We set August 2015 at event time 0 when the universal two-child policy started to arouse public attention. The dotted line shows the amount of short-term consumption loans to households in China using statistics published by the People's Bank of China.

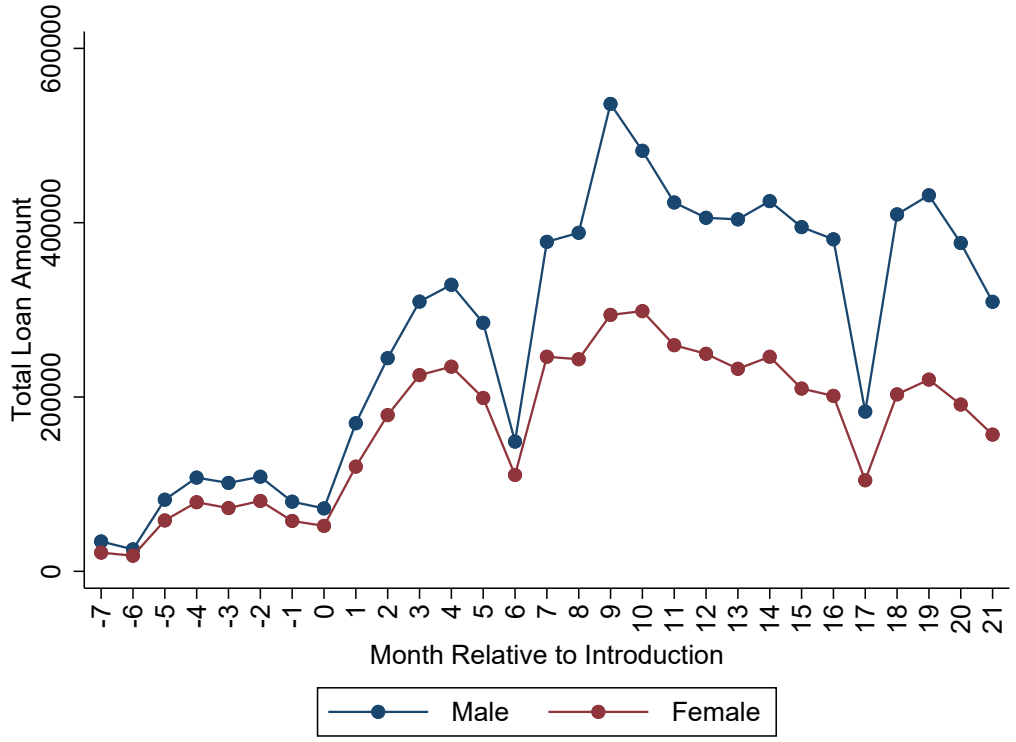


Figure 3. **Average Loan Amount: Gender Comparison**

This figure displays the gender comparison for the monthly average of loan amount across universities between January 2015 and May 2017. We set August 2015 at event time 0 when the universal two-child policy started to arouse public attention.

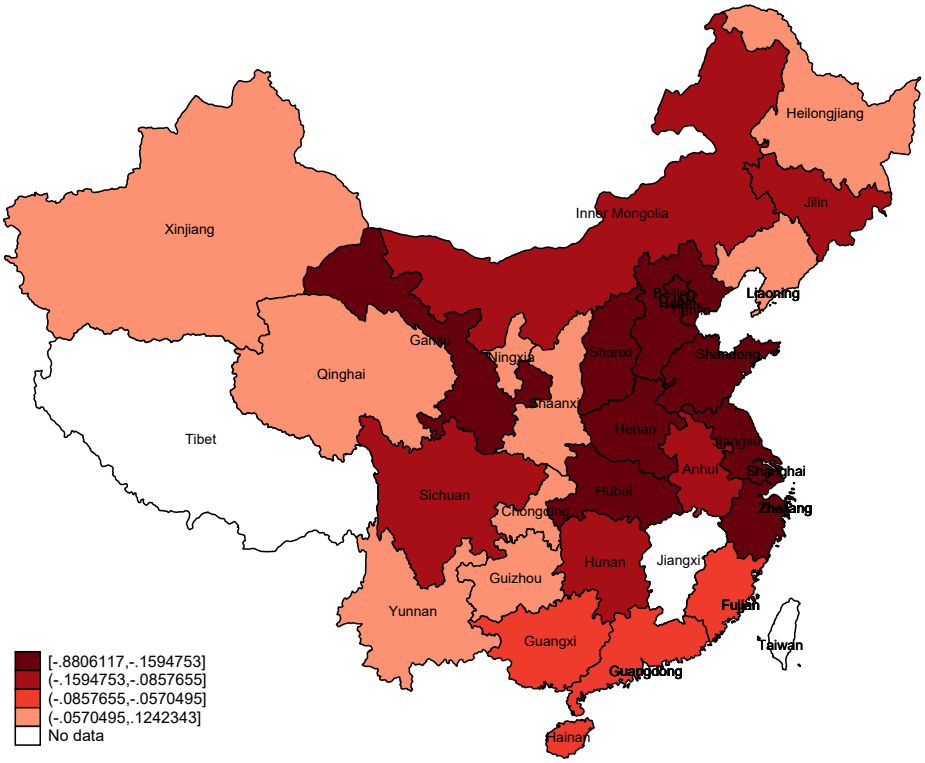


Figure 4. **Heterogeneous Effect of the Universal Two-child Policy on Loan Applications: Geographical Distribution**

This heatmap displays the effect of the universal two-child policy on loan applications across provinces. Policy effects for provinces are estimated by interacting the difference-in-difference term in Equation 1 with province dummies. Absolute effects for each province are then computed by adding the effect for the baseline province. Jiangxi Province and Tibet Autonomous Region are excluded after we collapse the raw data to the university-month level as we require observations every month during the sample period. There are no observations from Taiwan in our raw sample.

Internet Appendix to "Scared Away: Credit Demand Response to Expected Motherhood Penalty in the Labor Market"

Table IA.1. **The Effect of the Universal Two-child Policy on Loan Delinquency (Robustness)**

This table shows robustness checks of the effect of the universal two-child policy on loan delinquency. Specifically, we use alternative time lengths for the two observation windows around August 2015 in each column. We then rerun the test for the policy effect on loan delinquency. *Delinquency* is an indicator taking one for loans with records of default. $Post_{t\geq 201508}$ is an indicator taking one for months since August 2015. *Female* is an indicator taking one for female applicants. Loan controls are dummy variables for loan purposes, loan terms, and loan amounts. Borrower controls are dummy variables for age, grades, majors, and family income levels of loan applicants. Standard errors are clustered by city. Standard errors are in parentheses. ***, **, * indicate significance at the 1%, 5%, and 10% levels, respectively.

Dep. Var	Delinquency		
	windows=±6 months	windows=±5 months	windows=±4 months
$Post_{t\geq 201508} \times$ Female	0.037	0.047	0.037
	(0.050)	(0.052)	(0.080)
Adj. R^2	-0.039	-0.049	-0.109
Observations	3,269	2,450	1,547
Loan Controls	Yes	Yes	Yes
Borrower Controls	Yes	Yes	Yes
University × Gender Fixed effects	Yes	Yes	Yes
City × Year-month Fixed effects	Yes	Yes	Yes
Clustered	City	City	City

Table IA.2. **The Effect of Provincial Reforms of Maternity Leave on Loan Applications of Male Students, Using Staggered DiD**

This table shows the effect of provincial reforms of maternity leave on loan applications from male students only. Following the new birth policy in 2015, provinces across China have amended regulations on population and family planning to extend the length of maternity leave. We thus focus on male students and test the effect by comparing situations of loan applications before and after provincial reforms of maternity leave. Three observation windows of 30, 60, or 90 days are used for both periods before and after the announcement of provincial amendments, respectively. We exclude the events that contain observations in 2015 to capture the pure effect of extended maternity leave. *Log(Number of Applications)* is the log of the total number of loan applications. *Post*$_{t,t+29}$, *Post*$_{t,t+59}$, and *Post*$_{t,t+89}$ are indicators taking one for 30, 60, and 90 days since the announcement of provincial amendments, respectively. Standard errors are clustered by event-city. Standard errors are in parentheses. ***, **, * indicate significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)
Dep. Var	Log(Number of Applications)		
Post$_{t,t+29}$	0.011		
	(0.021)		
Post$_{t,t+59}$		-0.013	
		(0.014)	
Post$_{t,t+89}$			-0.012
			(0.008)
Adj. R^2	0.460	0.470	0.461
Observations	24,120	42,960	72,360
University Fixed effects	Yes	Yes	Yes
Year-month-day Fixed effects	Yes	Yes	Yes
Clustered	City	City	City

Table IA.3. **The Effect of Provincial Reforms of Maternity Leave on Loan Applications, Using Stacked DiD**

This table shows the effect of provincial maternity leave reforms on loan applications using the stacked difference-in-difference approach. Following the new birth policy in 2015, provinces across China have amended regulations on population and family planning to extend the length of maternity leave. We thus test the effect by comparing situations of loan applications before and after provincial reforms of maternity leave. Three observation windows of 30, 60, or 90 days are used for both periods before and after the announcement of provincial amendments, respectively. We exclude the events that contain observations in 2015 to capture the pure effect of extended maternity leave. *Log(Number of Applications)* is the log of the total number of loan applications. *Post*$_{t,t+29}$, *Post*$_{t,t+59}$, and *Post*$_{t,t+89}$ are indicators taking one for 30, 60, and 90 days since the announcement of provincial amendments, respectively. *Female* is an indicator taking one for female applicants. Standard errors are clustered by event-city. Standard errors are in parentheses. ***, **, * indicate significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)
Dep. Var	Log(Number of Applications)		
Post$_{t,t+29}$ × Female	-0.026**		
	(0.011)		
Post$_{t,t+59}$ × Female		-0.068***	
		(0.017)	
Post$_{t,t+89}$ × Female			-0.004
			(0.040)
Adj. R^2	0.531	0.533	0.545
Observations	254,451	161,733	49,866
University × Gender × Event Fixed effects	Yes	Yes	Yes
Year-month-day × Event Fixed effects	Yes	Yes	Yes
Clustered	Event-City	Event-City	Event-City

Table IA.4. **Heterogeneous Effect of the Universal Two-child Policy on Loan Applications: Loan Characteristics (Robustness)**

This table shows robustness checks of the effect of the universal two-child policy on loan applications, depending on loan characteristics. Specifically, we use alternative definitions for long loan terms (Panel A) and large loan amounts (Panel B). In Panel A, we redefine "long-term loans" as loans with a loan term of 12 months or more. In Panel B, we use different cutoffs of loan amounts to redefine "large loans" in each column. We then rerun previous tests for the heterogeneous effect of the policy depending on loan term and loan amount. *Fraction of Total Applications* is the ratio of the number of the specific type of loan applications to the number of total loan applications. $Post_{t\geq 201508}$ is an indicator taking one for months since August 2015. *Female* is an indicator taking one for female applicants. Standard errors are clustered by city. Standard errors are in parentheses. ***, **, * indicate significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Long Term			
Dep. Var	Fraction of Total Applications loan term $\geq$ 12 months		
$Post_{t\geq 201508} \times$ Female	-0.039***		
	(0.008)		
Adj. R^2	0.323		
Observations	21,602		
Panel B: Large Amount			
Dep. Var	Fraction of Total Applications		
	loan amount>5000	loan amount>6000	loan amount>8000
$Post_{t\geq 201508} \times$ Female	-0.035***	-0.039***	-0.037***
	(0.010)	(0.011)	(0.011)
Adj. R^2	0.288	0.283	0.239
Observations	21,602	21,602	21,602
University $\times$ Gender Fixed effects	Yes	Yes	Yes
City $\times$ Year-month Fixed effects	Yes	Yes	Yes
Clustered	City	City	City

Table IA.5. **Heterogeneous Effect of the Universal Two-child Policy on Loan Applications: Economic Opportunities (Robustness)**

This table shows robustness checks of the heterogeneous effect of the universal two-child policy on loan applications, depending on economic opportunities. In Panel A, we construct proxies of regional economic development based on annual GDP per capita values of provinces and cities in the previous calendar year of loan applications. *GDPPC*$_{province,top\,decile}$ is an indicator taking one if the provincial GDP per capita falls into the 10th decile in the cross-section. *GDPPC*$_{city,top\,decile}$ is an indicator taking one if the city GDP per capita falls into the 10th decile in the cross-section. *GDPPC*$_{province,top\,5}$ is an indicator taking one if the province is ranked in the top 5 from a descending sorting of GDP per capita in the cross-section. *GDPPC*$_{city,top\,10}$ is an indicator taking one if the city is ranked in the top 10 from a descending sorting of GDP per capita in the cross-section. In Panel B, we construct other proxies which reflect different dimensions of regional economic development. *Large Tertiary Sector* is an indicator taking one if the ratio of GDP of the tertiary sector to total provincial GDP is higher than the median across provinces. *High Urban Disposable Income* is an indicator taking one if the provincial value of urban disposable income is higher than the median across provinces. *High Urban Disposable Income: Wages & Salaries* is an indicator taking one if the provincial value of wages and salaries (a component of urban disposable income) is higher than the median across provinces. *High Urban Consumption Expenditure* is an indicator taking one if the provincial value of urban consumption expenditure is higher than the median across provinces. *Log(Number of Applications)* is the log of the total number of loan applications. *Post*$_{t\geq 201508}$ is an indicator taking one for months since August 2015. *Female* is an indicator taking one for female applicants. We compute the dummy variable for economic opportunities using regional annual values in the previous calendar year of loan applications. Data on regional GDP per capita, GDP of tertiary sector, urban disposable income, and urban consumption expenditure are all from China Statistical Yearbooks and Provincial Statistical Yearbooks. Standard errors are clustered by city. Standard errors are in parentheses. ***, **, * indicate significance at the 1%, 5%, and 10% levels, respectively.

Panel A: GDP Per Capita				
	(1)	(2)	(3)	(4)
Dep. Var	Log(Number of Applications)			
Post$_{t\geq 201508}$ × Female	-0.094***	-0.091***	-0.085***	-0.119***
	(0.022)	(0.024)	(0.022)	(0.036)
Post$_{t\geq 201508}$ × Female × GDPPC$_{province,top\,decile}$	-0.405*			
	(0.204)			
Post$_{t\geq 201508}$ × Female × GDPPC$_{city,top\,decile}$		-0.142		
		(0.089)		
Post$_{t\geq 201508}$ × Female × GDPPC$_{province,top5}$			-0.298**	
			(0.141)	
Post$_{t\geq 201508}$ × Female × GDPPC$_{city,top10}$				-0.062*
				(0.037)
Adj. R^2	0.894	0.895	0.895	0.894
Observations	21,605	21,605	21,605	21,605
Panel B: Other Economic Dimensions				
	(1)	(2)	(3)	(4)
Dep. Var	Log(Number of Applications)			
Post$_{t\geq 201508}$ × Female	-0.103***	-0.078**	-0.084***	-0.090***
	(0.025)	(0.032)	(0.027)	(0.031)
Post$_{t\geq 201508}$ × Female × Large Tertiary Sector	-0.052			
	(0.046)			
Post$_{t\geq 201508}$ × Female × High Urban Disposable Income		-0.093		
		(0.059)		
Post$_{t\geq 201508}$ × Female × High Urban Disposable Income: Wages & Salaries			-0.110	
			(0.069)	
Post$_{t\geq 201508}$ × Female × High Urban Consumption Expenditure				-0.068
				(0.055)
Adj. R^2	0.894	0.895	0.895	0.895
Observations	21,605	21,605	21,605	21,605
University × Gender Fixed effects	Yes	Yes	Yes	Yes
City × Year-month Fixed effects	Yes	Yes	Yes	Yes
Clustered	City	City	City	City

Table IA.6. **Heterogeneous Effect of the Universal Two-child Policy on Loan Applications: Economic Structure (Robustness)**

This table shows robustness checks of the heterogeneous effect of the universal two-child policy on loan applications, depending on economic structure. In Panel A, we use a new proxy of regional economic structure in terms of urban female employment. *Large State-owned Sector for Female* is an indicator taking one if the ratio of urban female employment in state-owned units, state jointly-run enterprises, and sole state-owned companies to total urban unit female employment is higher than the median across provinces. Column (1) shows test results using the full sample, while Columns (2) to(4) show test results using sub-samples in which observations from major cities are excluded. The classification of major cities follows the definition used in the Residential Property Price Index published by the National Bureau of Statistics of China. First-tier cities refer to Beijing, Shanghai, Guangzhou and Shenzhen. In Panel B, we use an alternative definition of the state-owned sector in urban employment by narrowing down the scope to state-owned units only. *Large State-owned Sector*$_{SOU}$ is an indicator taking one if the ratio of urban employment in state-owned units to total urban employment in units is higher than the median across provinces. *State-owned Sector*$_{SOU}$ is the ratio of urban employment in state-owned units to total urban employment in units of the province. *Large State-owned Sector for Female*$_{SOU}$ is an indicator taking one if the ratio of urban female employment in state-owned units to total urban female employment in units is higher than the median across provinces. *State-owned Sector for Female*$_{SOU}$ is the ratio of urban female employment in state-owned units to total urban female employment in units of the province. We use the full sample for all tests shown in Panel B. *Log(Number of Applications)* is the log of the total number of loan applications. *Post*$_{t\geq 201508}$ is an indicator taking one for months since August 2015. *Female* is an indicator taking one for female applicants. We compute the dummy variable for economic structure using provincial annual values in the previous calendar year of loan applications. Data on urban employment and urban female employment is from China Labour Statistical Yearbooks. Standard errors are clustered by city. Standard errors are in parentheses. ***, **, * indicate significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Urban Unit Female Employment				
	(1)	(2)	(3)	(4)
Dep. Var	Log(Number of Applications)			
	Full Sample	Beijing Excluded	Beijing&Shanghai Excluded	First-tier Cities Excluded
Post$_{t\geq 201508}$ × Female	-0.211***	-0.211***	-0.156***	-0.160***
	(0.054)	(0.057)	(0.026)	(0.026)
Post$_{t\geq 201508}$ × Female × Large State-owned Sector for Female	0.162***	0.162**	0.108***	0.111***
	(0.061)	(0.063)	(0.038)	(0.039)
Adj. R^2	0.895	0.895	0.897	0.898
Observations	21,605	21,054	20,445	19,894
Panel B: Urban Unit Employment				
	(1)	(2)	(3)	(4)
Dep. Var	Log(Number of Applications)			
Post$_{t\geq 201508}$ × Female	-0.211***	-0.442***	-0.211***	-0.449**
	(0.054)	(0.163)	(0.054)	(0.171)
Post$_{t\geq 201508}$ × Female × Large State-owned Sector$_{SOU}$	0.162***			
	(0.061)			
Post$_{t\geq 201508}$ × Female × State-owned Sector$_{SOU}$		0.754**		
		(0.349)		
Post$_{t\geq 201508}$ × Female × Large State-owned Sector for Female$_{SOU}$			0.162***	
			(0.061)	
Post$_{t\geq 201508}$ × Female × State-owned Sector for Female$_{SOU}$				0.682**
				(0.326)
Adj. R^2	0.895	0.895	0.895	0.895
Observations	21,605	21,605	21,605	21,605
University × Gender Fixed effects	Yes	Yes	Yes	Yes
City × Year-month Fixed effects	Yes	Yes	Yes	Yes
Clustered	City	City	City	City

Table IA.7. **Heterogeneous Effect of the Universal Two-child Policy on Loan Applications: Binding Power of the One-Child Policy**

This table shows the heterogeneous effect of the universal two-child policy on loan applications, depending on the binding power of the one-child policy. In Panel A, we construct proxies of regional effects of the one-child policy based on the ratio of ethnic minorities to the local population because non-Han ethnic groups are not subject to the historical birth control policy. *Large Minority Group*$_{top\ quartile}$ is an indicator taking one if the ratio of non-Han ethnic groups to local population falls into the upper quartile in the cross-section. *Large Minority Group*$_{top\ decile}$ is an indicator taking one if the ratio of non-Han ethnic groups to local population falls into the 10th decile in the cross-section. In Panel B, we construct other proxies which reflect the binding power of the one-child policy. Specifically, we use the ratio of residents with agricultural household registration ("hukou") to the local population because the birth restriction is relaxed for them. *Large Agricultural Group*$_{top\ quartile}$ is an indicator taking one if the ratio of agricultural hukou holders to local population falls into the upper quartile in the cross-section. *Large Agricultural Group*$_{top\ decile}$ is an indicator taking one if the ratio of agricultural hukou holders to local population falls into the 10th decile in the cross-section. *Log(Number of Applications)* is the log of the total number of loan applications. *Post*$_{t\geq 201508}$ is an indicator taking one for months since August 2015. *Female* is an indicator taking one for female applicants. We compute dummy variables for the binding power of the one-child policy using provincial mean values computed from four censuses during 1982-2010. Data on population composition are from the third (1982), fourth (1990), fifth (2000), and sixth (2010) national population census of China. Standard errors are clustered by city. Standard errors are in parentheses. ***, **, * indicate significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Ethnic Minorities		
	(1)	(2)
Dep. Var	Log(Number of Applications)	
Post$_{t\geq 201508}$ × Female	-0.152***	-0.128***
	(0.038)	(0.034)
Post$_{t\geq 201508}$ × Female × Large Minority Group$_{top\ quartile}$	0.156***	
	(0.049)	
Post$_{t\geq 201508}$ × Female × Large Minority Group$_{top\ decile}$		0.143***
		(0.039)
Adj. R^2	0.895	0.894
Observations	21,605	21,605
Panel B: Agricultural Household Registration		
	(1)	(2)
Dep. Var	Log(Number of Applications)	
Post$_{t\geq 201508}$ × Female	-0.140***	-0.140***
	(0.044)	(0.036)
Post$_{t\geq 201508}$ × Female × Large Agricultural Group$_{top\ quartile}$	0.051	
	(0.057)	
Post$_{t\geq 201508}$ × Female × Large Agricultural Group$_{top\ decile}$		0.163***
		(0.053)
Adj. R^2	0.894	0.895
Observations	21,605	21,605
University × Gender Fixed effects	Yes	Yes
City × Year-month Fixed effects	Yes	Yes
Clustered	City	City

Table IA.8. **Heterogeneous Effect of the Universal Two-child Policy on Loan Applications: Fertility Responses (College Cities)**

This table shows the heterogeneous effect of the universal two-child policy on loan applications, depending on regional fertility responses to the policy in students' college cities. We capture fertility responses by changes in birth rates at the prefectural city level. We construct the indicators by comparing the mean birth rates of the post-shock period with the pre-shock level in 2015 and then sorting the sample cities by the changes. In Panel A, we normalize the birth rate gap by the average birth rates over the period (2010-2015) before the universal two-child policy. In Panel B, we normalize the birth rate gap by the average birth rates over the period (2010-2013) before the selective two-child policy, which allowed two children if at least one parent was the only child. *Birth Rate Gap*$_{top\,decile,\,post=2016-2018}$ is an indicator taking one if the normalized birth rate gap, computed as the difference between the 2016–2018 mean and the 2015 level, lies in the top decile of the cross-section of our sample cities. Similarly, *Birth Rate Gap*$_{top\,decile,\,post=2016-2019}$ is an indicator in which the post-shock period is extended to 2019. *Log(Number of Applications)* is log of the total number of loan applications. *Post*$_{t\geq 201508}$ is an indicator taking one for months since August 2015. *Female* is an indicator taking one for female applicants. Data on the city-level birth rates of the household registered population are from Provincial Statistical Yearbooks, City Statistical Yearbooks, and City Chronicles. Standard errors are clustered by city. Standard errors are in parentheses. ***, **, * indicate significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Normalized by the Pre-Universal Two-Child Policy Period Mean		
	(1)	(2)
Dep. Var	Log(Number of Applications)	
Post$_{t\geq 201508}$ × Female	-0.158***	-0.158***
	(0.057)	(0.056)
Post$_{t\geq 201508}$ × Female × Birth Rate Gap$_{top\,decile,\,post=2016-2018}$	-0.163**	
	(0.076)	
Post$_{t\geq 201508}$ × Female × Birth Rate Gap$_{top\,decile,\,post=2016-2019}$		-0.196***
		(0.073)
Adj. R^2	0.884	0.884
Observations	11,513	11,513
Panel B: Normalized by the Pre-Selective Two-Child Policy Period Mean		
	(1)	(2)
Dep. Var	Log(Number of Applications)	
Post$_{t\geq 201508}$ × Female	-0.154***	-0.159***
	(0.058)	(0.057)
Post$_{t\geq 201508}$ × Female × Birth Rate Gap$_{top\,decile,\,post=2016-2018}$	-0.204**	
	(0.093)	
Post$_{t\geq 201508}$ × Female × Birth Rate Gap$_{top\,decile,\,post=2016-2019}$		-0.172**
		(0.074)
Adj. R^2	0.883	0.882
Observations	11,397	11,397
University × Gender Fixed effects	Yes	Yes
City × Year-month Fixed effects	Yes	Yes
Clustered	City	City

Table IA.9. **Heterogeneous Effect of the Universal Two-child Policy on Loan Applications: Son Preference**

This table shows robustness checks of the heterogeneous effect of the universal two-child policy on loan applications, depending on the extent of son preference in students' hometowns. We use sex ratios at birth to capture the degree of son preference in students' residence provinces which are then sorted and divided into two groups by the median. We run the baseline regression in each group and compare their results. In Panel A, we compute the mean sex ratio at birth for all newborns. We further compute the ratios for urban newborns by different birth orders: the first born in Panel B, and the second or later born in Panel C. *Log(Number of Applications)* is the log of the total number of loan applications. *Post*$_{t\geq 201508}$ is an indicator taking one for months since August 2015. *Female* is an indicator taking one for female applicants. Data on birth rates are from China Statistical Yearbooks. We follow Wei and Zhang (2011) to estimate annual sex ratios at birth from the data of four national censuses during 1982-2010. For sex ratios by order, we use the fifth (2000) and sixth (2010) censuses due to data availability. Standard errors are clustered by city. Standard errors are in parentheses. P-values are in parentheses for the difference between coefficient estimates. ***, **, * indicate significance at the 1%, 5%, and 10% levels, respectively.

Panel A: All Birth			
Dep. Var	Log(Number of Applications)		
	(1)	(2)	
	Low	High	Low - High
Post$_{t\geq 201508}$ × Female	-0.043	-0.154***	0.111***
	(0.035)	(0.041)	(0.000)
Adj. R^2	0.892	0.885	
Observations	8,613	11,455	
Panel B: Urban First Born			
Dep. Var	Log(Number of Applications)		
	(1)	(2)	
	Low	High	Low - High
Post$_{t\geq 201508}$ × Female	-0.003	-0.133***	0.130***
	(0.036)	(0.030)	(0.000)
Adj. R^2	0.904	0.875	
Observations	7,482	12,035	
Panel C: Urban Second or Later Born			
Dep. Var	Log(Number of Applications)		
	(1)	(2)	
	Low	High	Low - High
Post$_{t\geq 201508}$ × Female	-0.055*	-0.187***	0.133***
	(0.029)	(0.057)	(0.000)
Adj. R^2	0.894	0.880	
Observations	9,280	10,904	
University × Gender Fixed effects	Yes	Yes	
City × Year-month Fixed effects	Yes	Yes	
Clustered	City	City	

Table IA.10. **Heterogeneous Effect of the Universal Two-child Policy on Loan Applications: Fertility Responses (Hometown Provinces)**

This table shows robustness checks of the heterogeneous effect of the universal two-child policy on loan applications, depending on regional fertility responses to the policy in students' hometowns. We capture fertility responses by changes in birth rates and total fertility rates at the provincial level. Students' hometown provinces are then sorted into two groups by the median. We run the baseline regression in each group and compare their results. In Panel A, we compute the changes in birth rates by comparing two-year averages before and after the policy. In Panel B, we compare the three-year mean rates. In Panel C, we capture fertility responses in terms of total fertility rates. In Panel D, we focus on the change in total fertility rates for women aged from 35 to 49. *Log(Number of Applications)* is the log of the total number of loan applications. $Post_{t\geq 201508}$ is an indicator taking one for months since August 2015. *Female* is an indicator taking one for female applicants. Data on birth rates are from China Statistical Yearbooks. Data on annual birth rates are from the National Bureau of Statistics of China. Data on total fertility rates are from the sixth (2010) and the seventh (2020) national population census of China. Standard errors are clustered by city. Standard errors are in parentheses. P-values are in parentheses for the difference between coefficient estimates. ***, **, * indicate significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Changes in Birth Rates ($\pm$ 2 Years)			
Dep. Var	Log(Number of Applications)		
	(1)	(2)	
	Low	High	Low - High
$Post_{t\geq 201508} \times$ Female	-0.099***	-0.112*	0.013
	(0.033)	(0.066)	(0.430)
Adj. R^2	0.876	0.900	
Observations	9,512	10,092	
Panel B: Changes in Birth Rates ($\pm$ 3 Years)			
Dep. Var	Log(Number of Applications)		
	(1)	(2)	
	Low	High	Low - High
$Post_{t\geq 201508} \times$ Female	-0.115***	-0.065*	-0.051
	(0.038)	(0.033)	(0.195)
Adj. R^2	0.874	0.898	
Observations	7,598	11,948	
Panel C: Changes in Total Fertility Rates			
Dep. Var	Log(Number of Applications)		
	(1)	(2)	
	Low	High	Low - High
$Post_{t\geq 201508} \times$ Female	-0.152***	-0.089***	-0.063
	(0.042)	(0.031)	(0.105)
Adj. R^2	0.891	0.888	
Observations	10,295	9,193	
Panel D: Changes in Total Fertility Rates (Age 35-49)			
Dep. Var	Log(Number of Applications)		
	(1)	(2)	
	Low	High	Low - High
$Post_{t\geq 201508} \times$ Female	-0.081**	-0.141**	0.061
	(0.031)	(0.064)	(0.105)
Adj. R^2	0.891	0.883	
Observations	11,600	7,714	
University $\times$ Gender Fixed effects	Yes	Yes	
City $\times$ Year-month Fixed effects	Yes	Yes	
Clustered	City	City	

Table IA.11. **Descriptive Statistics: Survey Sample**

This table provides descriptive statistics for the sample of our survey on college students' views on the recent birth policies and their labor market expectations. Respondents are separated based on their gender. We provide basic statistics on age, grade, and majors of respondents, as well as the quality and location of their schools. *Respondent: STEM Major* is an indicator for respondents majoring in engineering, science, agriculture, and medicine. *Respondent: Well-off* is an indicator for respondents who believe the economic status of their families is relatively good. *School: Top-tier* is an indicator for colleges included in the Project 985, Project 211, and the Double First-Class Construction, which are the main higher education development and sponsorship schemes initiated by the central government. For the indicators of school locations, we use the classification for major economic regions adopted by the National Bureau of Statistics.

	Total		Male		Female	
	N	Mean	N	Mean	N	Mean
Respondent: Age	691	21.476	296	21.814	395	21.223
Respondent: Grade ≥ 3	691	0.796	296	0.811	395	0.785
Respondent: STEM Major	691	0.469	296	0.639	395	0.342
Respondent: Well-off	691	0.137	296	0.176	395	0.109
School: Top-tier	691	0.246	296	0.247	395	0.246
School: Region = East	691	0.462	296	0.490	395	0.441
School: Region = Central	691	0.284	296	0.304	395	0.268
School: Region = West	691	0.211	296	0.179	395	0.235
School: Region = Northeast	691	0.043	296	0.027	395	0.056

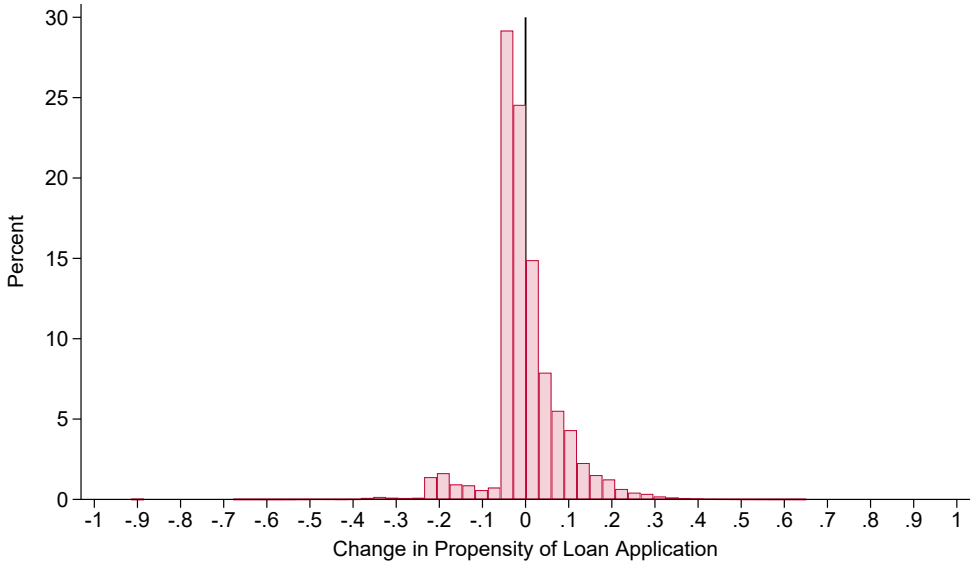


Figure IA.1. **Distribution of Change in Loan Applications**

This figure plots the distribution of the post-shock change in the propensity of P2P loan applications among female students. The x-axis shows the change in the propensity of loan applications. We follow Gu, He, Qian, and Ren (2021) to compute the post-shock change in propensity.

I Reforms to Maternity Leave

We exploited staggered reforms to maternity leave to examine their impact on loan applications among college students in China. Following the introduction of the universal two-child policy in 2015, provincial governments progressively amended their Population and Family Planning Regulations to promote fertility further. By the end of our sample period, all provinces, except Tibet and Xinjiang, had adopted these reforms. These policy changes generally involve extensions to maternity leave beyond the national standard, with the specific duration varying across provinces. For most provinces, the new regulations took effect immediately upon formal announcement of the amendments. As such, we treat the dates of formal announcement of these amendments as the effective start of the reforms. The following is a chronological list of these reforms.

	Announcement Date	Implementation Date
Guangdong	2015.12.30	2016.01.01
Hubei	2016.01.13	2016.01.13
Tianjin	2016.01.14	2016.01.14
Zhejiang	2016.01.14	2016.01.14
Anhui	2016.01.15	2016.01.16
Guangxi	2016.01.15	2016.01.16
Jiangxi	2016.01.20	2016.01.20
Shanxi	2016.01.20	2016.01.20
Ningxia	2016.01.21	2016.01.21
Shandong	2016.01.22	2016.01.22
Sichuan	2016.01.22	2016.01.22
Fujian	2016.02.19	2016.02.19
Shanghai	2016.02.23	2016.03.01
Liaoning	2016.03.23	2016.03.23
Beijing	2016.03.24	2016.03.24
Qinghai	2016.03.25	2016.03.25
Hebei	2016.03.29	2016.03.29
Hunan	2016.03.30	2016.03.30
Inner Mongolia	2016.03.30	2016.03.30
Jiangsu	2016.03.30	2016.03.30
Jilin	2016.03.30	2016.03.30
Chongqing	2016.03.31	2016.04.01
Guizhou	2016.03.31	2016.03.31
Hainan	2016.03.31	2016.03.31
Yunnan	2016.03.31	2016.03.31
Gansu	2016.04.01	2016.04.01
Heilongjiang	2016.04.21	2016.04.21
Shaanxi	2016.05.26	2016.05.26
Henan	2016.05.27	2016.05.27
Tibet	/	/
Xinjiang	/	/

II Survey Questions

We design a survey to investigate how college students in China perceive recent changes in birth policies and their potential impact on career development. We distribute the survey via Credamo to our target respondents, who are currently enrolled college students in China. The survey is in Chinese, and we have translated the questions into English as follows.

> In recent years, China's birth policies have been gradually relaxed, evolving from the former one-child policy to the universal two-child policy introduced in 2016, and subsequently to the three-child policy implemented in 2021. At the same time, local governments have introduced supporting measures such as extended maternity leave and childcare subsidies. These policy changes affect not only household fertility decisions but also the broader labor market environment, thereby having profound implications for a wide range of population groups, including college students.

Q1. Which of the following best describes the trend in China's birth policies in recent years?

Relaxation (only this choice continues the survey)
No change
Tightening
Uncertain

Please answer the following questions based on the policy background described above. There are no right or wrong answers.

Q2. With the gradual relaxation of China's birth policies, how is men's willingness to have children likely to change?

Increase
Remain largely unchanged
Decrease
Uncertain

Q3. With the gradual relaxation of China's birth policies, how is women's willingness to have children likely to change?

Increase
Remain largely unchanged
Decrease
Uncertain

Q4. With the gradual relaxation of China's birth policies, how is the overall number of births likely to change?

Increase
Remain largely unchanged
Decrease
Uncertain

Q5. With the gradual relaxation of China's birth policies, how is employers' concern about birth-related labor costs for female employees (e.g., maternity leave, replacement hiring) likely to change?

Increase
Remain largely unchanged
Decrease
Uncertain

Q6. With the gradual relaxation of China's birth policies, how is employers' preference for male job applicants in hiring decisions likely to change?

Increase
Remain largely unchanged
Decrease
Uncertain

Q7. With the gradual relaxation of China's birth policies, how is employers' preference for male employees in promotion decisions likely to change?

Increase
Remain largely unchanged
Decrease
Uncertain

Q8. With the gradual relaxation of China's birth policies, compared with men, how is women's future situation in terms of employment opportunities likely to change?

Become more favorable
Remain largely unchanged
Become less favorable
Uncertain

Q9. With the gradual relaxation of China's birth policies, compared with men, how is women's future situation in terms of career development likely to change?

Become more favorable
Remain largely unchanged
Become less favorable
Uncertain

Q10. With the gradual relaxation of China's birth policies, compared with men, how is women's future situation in terms of income levels likely to change?

Become more favorable
Remain largely unchanged
Become less favorable
Uncertain

Q11. With the gradual relaxation of China's birth policies, compared with men, how is women's future income uncertainty likely to change?

Increase
Remain largely unchanged
Decrease
Uncertain

Q12. What is your gender?

Male
Female

Q13. What is your age?

-[Fill in the blank]-

Q14. What do your parents live?

-[Drop-down with options of provinces and cities]-

Q15. Where is your school located?

-[Drop-down with options of provinces and cities]-

Q16. What is the name of your school?

-[Fill in the blank]-

Q17. What type of institution do you attend?

University
Vocational or junior college

Q18. What is the current year of your study?

First-year undergraduate
Second-year undergraduate
Third-year undergraduate
Fourth-year undergraduate
Graduate student
Other (please specify)

Q19. What is your field of study?

Philosophy
Economics
Law
Education
Literature
History
Science
Engineering
Agriculture
Medicine
Management
Arts

Q20. What is the name of your major?

-[Fill in the blank]-

Q21. How would you describe your family's economic status?

Relatively good
Average
Relatively poor