



Universidad de  
**San Andrés**

UNIVERSIDAD DE SAN ANDRÉS

DEPARTAMENTO DE ECONOMÍA  
MAESTRÍA EN ECONOMÍA

*Some due relief of a heavy burden: the effect of an  
Argentinian childcare program on mothers' labor  
supply*

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## **“El efecto de la creación de los Centros de Primera Infancia sobre la oferta laboral de las madres”**

### Resumen

Este estudio tiene como objetivo identificar los efectos causales de un programa de cuidado infantil argentino en los resultados laborales de las madres. En 2009, el gobierno de la Ciudad de Buenos Aires lanzó un programa, a través del cual se crearon centros de cuidado infantil para niños vulnerables de hasta 3 años. Su principal objetivo era garantizar el crecimiento y desarrollo saludables de los niños más desprotegidos de la ciudad. Desde 2009, se han abierto 76 centros en toda la ciudad, la mayoría de los cuales se encuentran en los barrios del sur, donde viven las familias más vulnerables. En este estudio, utilizo un diseño de discontinuidad de regresión para estimar los efectos causales del programa explotando la discontinuidad en la elegibilidad para el programa. Mis resultados muestran que ser potencialmente elegible para el programa aumenta la probabilidad de la madre de pertenecer a la fuerza laboral en 9.67 puntos porcentuales y la probabilidad de estar empleada en 12.9 puntos porcentuales, cuando la cantidad de centros de cuidado infantil actualmente en funcionamiento en la `\textit{comuna}` donde vive la madre está entre 2 y 7. Estos efectos son tanto estadística como económicamente significativos. Este estudio proporciona valiosas perspectivas sobre la efectividad de los programas de cuidado infantil para promover la participación de las mujeres en el mercado laboral y destaca la necesidad de políticas que aborden el problema del acceso a los servicios de cuidado infantil.

Palabras Clave: Oferta laboral de madres, Cuidado infantil, Desigualdad de género, Mercado de trabajo

## **“Some due relief of a heavy burden: the effect of an Argentinian childcare program on mothers' labor supply”**

### Abstract

This study aims to identify the causal effects of an Argentinian childcare program on mothers' labor market outcomes. In 2009, the government of the City of Buenos Aires launched a program, through which it created childcare centers for vulnerable children up to 3 years. Its main purpose was to ensure the healthy growth and development of the most unprotected children in the city. Since 2009, 76 centers have been opened throughout the city, most of which are located in the southern neighborhoods, where the most vulnerable families live. In this study, I use a regression discontinuity design to estimate the causal effects of the program by exploiting the discontinuity in the eligibility for the program. My results show that being potentially eligible for the program increases the mother's probability of belonging to the workforce by 9.67 percentage points and the probability of being employed by 12.9 percentage points, when the quantity of current operating childcare centers in the `\textit{comuna}` where the mother lives is between 2 and 7. These effects are both statistically and economically significant. This study provides valuable insights into the effectiveness of childcare programs in promoting women's labor market participation and highlights the need for policies that address the issue of access to childcare services.

Palabras Clave: Mothers' labor supply, Childcare provision, Gender inequality, Labor market

Códigos JEL: J13, J16, J22

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Florencia Pucci

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This study aims to identify the causal effects of an Argentinian childcare program on mothers' labor market outcomes. In 2009, the government of the City of Buenos Aires launched a program, through which it created childcare centers for vulnerable children up to 3 years. Its main purpose was to ensure the healthy growth and development of the most unprotected children in the city. Since 2009, 76 centers have been opened throughout the city, most of which are located in the southern neighborhoods, where the most vulnerable families live. In this study, I use a regression discontinuity design to estimate the causal effects of the program by exploiting the discontinuity in the eligibility for the program. My results show that being potentially eligible for the program increases the mother's probability of belonging to the workforce by 9.67 percentage points and the probability of being employed by 12.9 percentage points, when the quantity of current operating childcare centers in the *comuna* where the mother lives is between 2 and 7. These effects are both statistically and economically significant. This study provides valuable insights into the effectiveness of childcare programs in promoting women's labor market participation and highlights the need for policies that address the issue of access to childcare services.

**Keywords:** Mothers' labor supply, Childcare provision, Gender inequality

# 1 Introduction

The past century has seen considerable progress in closing the educational gap between genders, leading to women achieving similar educational levels to men and breaking into traditionally male-dominated fields. However, even as women advanced educationally, income inequality persisted, implying the presence of other contributory factors. Gender norms that propagate unequal distribution of housework and caregiving duties, heavily restricting women's personal time and employment opportunities, have been highlighted as significant factors in maintaining the earnings gap.

Motherhood emerges as a key factor explaining the remaining gender earnings gap. This stage of life introduces a dilemma between work and household responsibilities, as mothers confront a tight trade-off. However, in higher-income families, the influence of motherhood on this gap is less pronounced, underlining the complex interplay between motherhood, income level, and the persistent gender earnings gap. For example, the Argentinian Permanent Household Survey revealed that in 2021, 70% of labor inactivity due to housework and care tasks corresponded to women. It was further observed that more than 65% of women not participating in the labor market due to housework and care tasks were mothers, with more than 55% of them living below the poverty line. In the City of Buenos Aires, the Time Use Survey shows the same pattern along the income distribution: while women in the first quintile spent twice as much time as men on housework and care tasks, women in the fifth quintile spent only 50% more time than men doing these tasks. A possible explanation is that lower-income households tend to be more numerous and encounter more difficulties accessing the private supply of these services.

The fact that gender inequality in time use mainly affects mothers with lower incomes has put childcare subsidies and the creation of public childcare facilities in the government's interest. However, empirical evaluations of these policies are scarce for developing countries and have

produced mixed results, largely due to methodological challenges. Many studies struggle with a lack of external validity, which hampers the generalization of findings across diverse contexts. More importantly, the difficulty of finding exogenous variation in the provision of childcare services presents a significant obstacle, potentially leading to biased estimates of their impact on mothers' labor market outcomes.

This study aims to identify the potential effects of an Argentinian childcare program on mothers' labor market behavior, therefore contributing to the literature that evaluates the effects of childcare policies on mother's labor market outcomes for developing countries. In 2009, the government of the City of Buenos Aires (CABA) launched the '*Centros de Primera Infancia* (CPI)' program, which consists in creating child-care centers with the primary purpose of ensuring the healthy growth and development of up to 3-year-old children in vulnerable situations. In Argentina, the children who can enroll in a 3 years-old classroom in a given year are those who turn 3 years old between July 1st of the previous year and June 30 of the academic year for which they are enrolling. Consequently, children who turn 3 years old between July 1st of the previous year and June 30 of the given year, and all children younger than them, are eligible to attend a CPI in that specific year. To exploit the discontinuity in eligibility around this well-defined cutoff and reduce subjectivity in choosing the control group -a challenge present while evaluating the effects of childcare policies-, I will use a regression discontinuity design. The creation of a running variable is possible since the EAH contains information on the month and year of birth of each mother's last child. This approach will allow me to create a control group that is more comparable to the potential beneficiaries, and provide a better estimation of the impact of the increase in public childcare supply on labor market's behavior of mothers.

The paper proceeds as follows. Section 2 reviews the existing literature. Section 3 describes the program. Section 4 describes the data that has been used and displays descriptive

statistics. Section 5 explains the empirical strategy. Section 6 shows the main results and provides support for the methodology used. Section 7 presents the conclusions.

## 2 Literature review

Gender inequality is a deep-rooted problem. It emerges in areas like education, personal autonomy, health, and household power, leading to clear disparities favoring men. Historically, literature studying gender inequality has relied on examining earnings differences, as it's a particularly revealing measure. This metric not only reflects outcomes of disparities in fields like education but also is a determinant of disparities in other aspects, like household power.

In the last century, educational gaps between genders have significantly narrowed, a change that has been directly linked to earnings differences. Women have reached educational levels similar to men, and successfully entered fields traditionally dominated by men, including those in STEM (Goldin 1990; Wang and Degol 2017; Goldin 1983). This trend supports the idea that the gender education gap was more about available opportunities than about preferences; when given the choice, women pursued education.

However, a troubling issue remains unexplained. Despite women's educational advances, significant income inequality persists. The increase in women's human capital through education hasn't completely translated into earnings equality. This might indicate that other factors are at play in sustaining the enduring gender earnings gap. Recent research has highlighted the role of gender norms, which define societal expectations about behaviors and responsibilities. Specifically, these norms often lead to an unequal distribution of housework and caregiving duties between men and women (Bianchi et al. 2012; Craig 2006; Ferrant, Pesando, and Nowacka 2014). The significant time commitment required for these tasks often limits women's personal time. This, in turn, restricts their ability to gain work experience, maintain a steady presence in the labor market, and secure their own income, thereby

perpetuating the gender earnings gap.

As expected, the trade-off between work responsibilities and household responsibilities is not equally tight for all women. Many studies suggest that inequalities in time use between men and women are influenced by specific life events or stages. Among these life events, motherhood emerges as the most influential factor contributing to this disparity, and offers a specific explanation to the remaining earnings gap (Anxo et al. 2007; Apps and Rees 2005; Connelly and Kimmel 2010; Maurer-Fazio et al. 2011; Rubiano Matulevich and Viollaz 2019; Pacelli, Pasqua, and Villosio 2013). For instance, Kleven, Landais, and Sogaard 2019 carried out a decomposition of gender earnings inequality in Denmark, finding that the remaining inequality is predominantly driven by the 'motherhood effect,' rather than disparities in education. Kuziemko et al. 2018 reinforced this theory, demonstrating that women often underestimate the future impact of motherhood on their labor supply when making crucial human capital decisions. This body of evidence underscores that motherhood is a significant factor hindering progress in reducing the gender earnings gap. Moreover, it's noteworthy that this 'motherhood effect' represents a more significant barrier for lower-income women. When we look at higher-income families, there's a less pronounced disparity in the division of childcare tasks between men and women (Marchionni, Gasparini, and Edo 2019). This indicates that the distribution of these responsibilities, and the corresponding influence on earnings, is also related to income level, adding another dimension to the factors explaining the remaining gender earnings gap.

To address the conflict between motherhood and labor market outcomes, various countries have implemented policies that subsidize or increase the offer of public care services for children under three years of age, often referred to as childcare services. These policies aim to alleviate the pressures of the 'motherhood effect', easing the pathway for mothers, to maintain a consistent presence in the workforce. Several studies have analyzed the impact of

expanding public or publicly subsidized childcare services, but the findings have been mixed. These discrepancies can be attributed to a couple of key factors. First, there's often a lack of external validity in these types of studies, which limits the applicability of their findings to different contexts or populations. More importantly, identifying exogenous variation in the provision of childcare services can be particularly challenging. Consequently, this could result in biased estimates when assessing the impact of these services on mothers' labor market outcomes.

Müller and Wrohlich 2020, for example, use a difference-in-differences design to estimate the effect of the expansion of subsidized childcare services in Germany. The authors define the treatment group as mothers in counties with an above-median increase in the provision of subsidized childcare between 2007 and 2014, and the control group as mothers in counties with increase in the provision of subsidized childcare below or equal to the median between 2007 and 2014. They find that the expansion had positive and significant effects on mothers' labor supply. Lefebvre and Merrigan 2008 also find a positive impact of the universal childcare policy implemented in Quebec, Canada, on mother's labor supply. The authors use a difference-in-differences approach, and they estimate the difference in labor supply between mothers who lived in Quebec during the reform and mothers who lived in other provinces of Canada.

On the other hand, Lundin, Mörk, and Öckert 2008 find that a decrease in childcare prices in Sweden, a consequence of a subsidy, did not affect mothers' labor supply. They use a difference-in-differences regression matching estimator to deal with the lack of exogenous variation in the treatment. Likewise, Rønsen 2009 finds that a cash transfer for childcare introduced in Norway had no effect on mother's labor supply right after the reform, and reduced the probability of being employed 4 years after the reform. The author also faces the problem of lacking exogenous variation, as the program was introduced nation-wide and



simultaneously for all parents with children of eligible age.

Despite the fact that some studies have already explored the relationship between public childcare policies and mothers' labor supply, the research on this topic is particularly limited in developing countries and, in general, the conclusions drawn are inconclusive. Furthermore, the nature of these policies usually challenges the identification of the causal effects, as the lack of exogenous variation requires a subjective definition of the counterfactual. This paper provides additional evidence from a developing country to the existing discussion by identifying the effects of the Argentinian CPI program on mothers' labor market outcomes. To avoid a subjective definition of the control group serving as a counterfactual, I exploit the fact that there is a discontinuity in eligibility around a well-defined cutoff: each year, only children who turn 3 years old after June 30th of the previous year are eligible for attending to a CPI. By using a regression discontinuity design to estimate local effects, I reduce the subjectivity present while defining the control group.

### **3 The program**

The CPI program was created by CABA's government in 2009, with the primary purpose of ensuring the healthy growth and development of up to 3-year-old children in vulnerable situations. In Argentina, in order to assist a 3 years-old classroom in a given year, a child must turn 3 years old before June 30 of that year. So, for any given year, all children less than 3 years old or turning 3 before June 30 are eligible to attend a CPI. Every family applying for a vacancy at a CPI must complete a survey in order to assess their demographic and socioeconomic characteristics. With this information, a social worker from the CPI calculates the Social Vulnerability Index (SVI), which allows her to rank families from the least to the most vulnerable one. Then, all available vacancies are allocated, starting with the most vulnerable families.

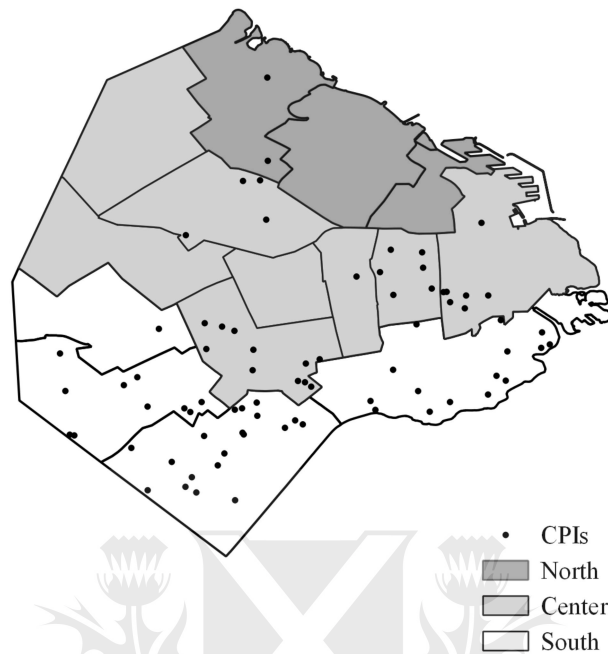


Figure 1: **Geographic distribution of the CPIs in 2019**

From 2010 to date, 76 CPIs have been created throughout CABA. The vast majority of CPI are located in the southern part of the city, where the most vulnerable families live. The geographic distribution of the centers in 2019 is represented in [Figure 1](#). At the beginning of 2015, more than 7,743 girls and boys were under the care of 56 centers (Unicef, 2019) and, in 2019, the number increased to 10,464 children.

Every CPI provides full-day care service (8 hours), distributing children in different rooms according to their age. The management of the CPI is conducted by the government of CABA in partnership with previously created social organizations. Thus, the government provides the necessary resources for executing the program and supervises the activities carried out in each CPI, whereas each social organization is responsible for its implementation.

## 4 Data and descriptive statistics

To measure mothers' labor market outcomes, I use data from the Annual Household Survey (EAH), which is representative of the population of CABA. The survey has been carried out since 2002 and classifies each surveyed individual by their *comuna* of residence<sup>1</sup>.

An attractive feature of the EAH is that it asks mothers the year and month of birth of their latest child. Thus, this survey allows me to create the potential beneficiaries and control groups. Furthermore, with the month and year of birth of the latest child, I can calculate the number of months of age difference that this child has in a particular year, relative to the cutoff month for that year. This variable is required to perform the regression discontinuity estimation I am proposing.

The second dataset used in this study provides information on the operational status of each of the 76 CPIs in a given year, as well as their respective locations within each *comuna*. This dataset allows me to create a variable that measures the intensity of the treatment by calculating the number of CPIs that are operating within a certain *comuna* and year.

As mentioned before, CABA is divided into *comunas*. At the same time, these are grouped into 3 zones: northern, central and southern. The criterion used for this division is related to the socioeconomic conditions of the residents in each *comuna*. While, the southern zone is the most vulnerable zone and the northern zone has the best relative socioeconomic conditions in CABA, the central zone represents its middle class. [Figure 2](#) illustrates this geographical division into zones and the *comunas* that belong to each zone. [Table 1](#) shows the number of participants of the CPI program in 2019 and 2020 by *comuna*, and confirms that the

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<sup>1</sup>The geographic division of CABA by *comunas* was implemented in 2005. Before that, the city was divided in *Centros de Gestión y Participación*. As a consequence of this change, 2002, 2003, 2004 and 2005 surveys cannot be used in the analysis because they were carried out under the old geographic division. Also, we cannot use the 2007 survey either because the geographic classification was done at a higher level due to issues with sample size.

program is more focused on the southern part of the city, where the most vulnerable families are located.

Table 1: **Children attending a CPI in Buenos Aires, 2019-2020, by *comuna* and zone**

Zone	Comuna	2019	2020
North	2	10	11
North	13	128	134
North	14	49	45
Center	1	978	949
Center	3	922	899
Center	5	181	180
Center	6	52	49
Center	7	1273	1203
Center	11	31	30
Center	12	20	22
Center	15	488	455
South	4	1718	1598
South	8	2269	2141
South	9	1096	989
South	10	214	216

[Figure 3](#) shows the evolution of the female labor force participation rate by zones for the years 2006 and 2008-2019, using the complete EAH sample. The rate of women from the south of CABA experienced an increase of 10 percentage points during this period, whereas the rate of women from the north of CABA saw a comparatively lesser increase of 3 percentage points. The comparative differences in the labor market between the zones motivate us to investigate the differential changes in the determinants of employment outcomes for the women from the south. This study focuses on the role played by the CPI program on women's labor supply.

As mentioned before, although mothers from the south were not the only women affected by the program, the intensity with which they were affected, compared to other mothers from CABA, was far greater. [Figure 4](#) compares the evolution over time of the female labor

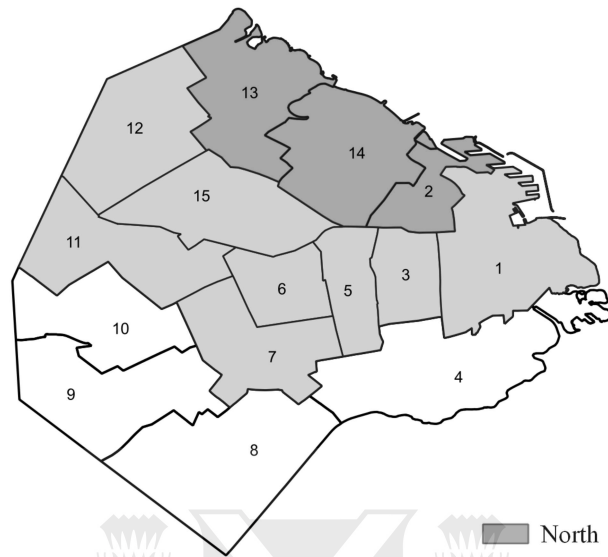


Figure 2: Zones of CABA

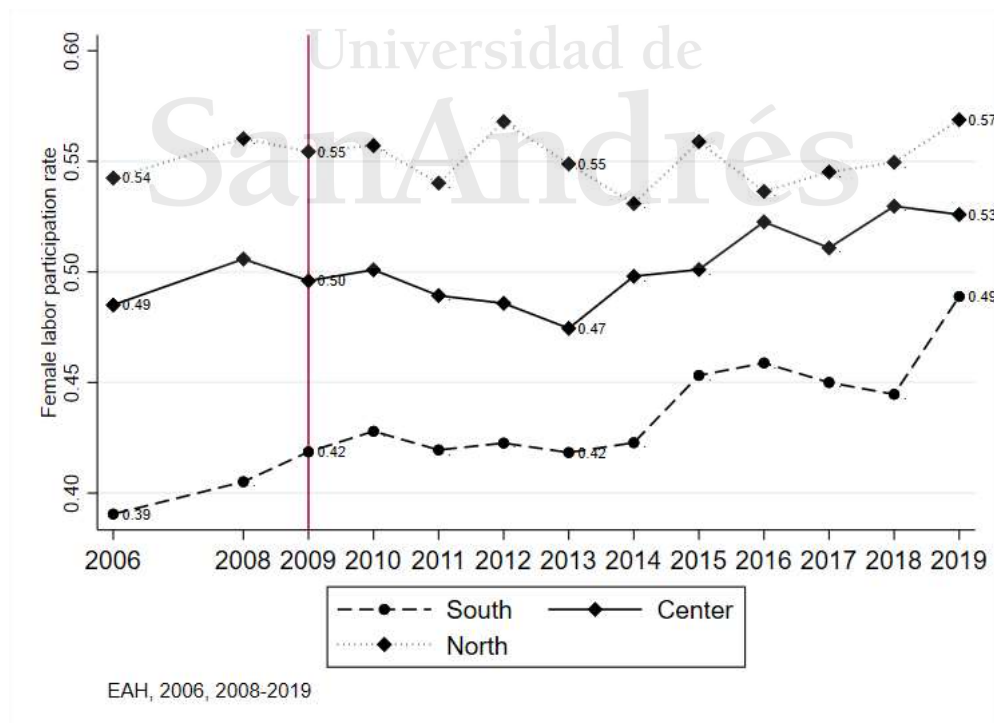


Figure 3: Female labor force participation rate

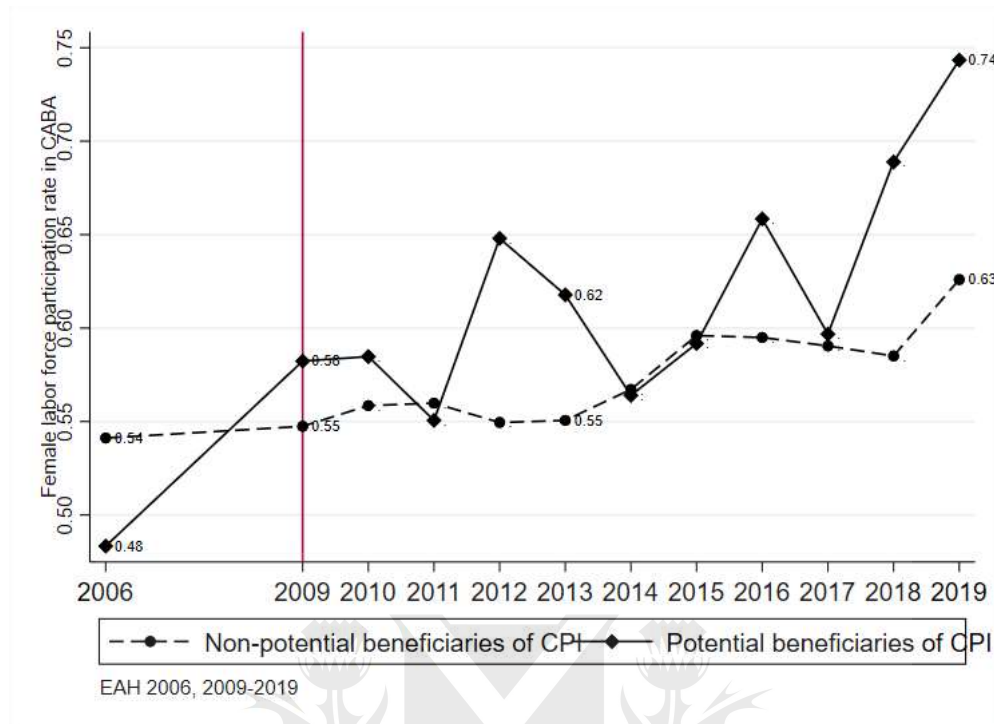


Figure 4: Female labor force participation rate, Southern zone

force participation rate for two groups of women from the south: potential beneficiaries of the program and non- beneficiaries of the program, where the non-beneficiaries are mothers who reside in CABA and do not have children who are eligible to attend a CPI in a given year. Ideally, we would like to identify women who make use of the CPI program to create these comparison groups, but this information is not available to date. Even though [Figure 4](#) shows that the growth of female labor participation rate in percentage points was much higher for the group of potential beneficiaries, it does not consider the intensity of the treatment received by each potential beneficiary, which is given by temporal and geographical variability at the *comuna* level. For this reason, the figure does not precisely reflect the transformation in female labor involvement between the treatment and control groups.

## 5 Empirical strategy

Estimating the causal effects of the increase in public childcare supply is challenged by the potential correlation between the timing and location of the establishment of CPIs and other factors that influence the labor market's behavior of mothers who use these facilities. In other words, the availability of childcare facilities is often driven by demand, which is influenced by economic and social factors that could also be correlated with the determinants of mothers' decision to participate in the labor market. Therefore, it can be difficult to disentangle the causal effects of public childcare supply from the underlying factors that are driving its provision. Using the geographical and temporal variation present in the data is a powerful strategy to capture the true impact of an increasing public childcare supply. Leveraging the geographical variability allows to control for economic and social factors that remain fixed over time and vary across different regions. Furthermore, by using year fixed effects, I can control for relevant events that affected different years differently.

Another challenge of the estimation is the lack of data to identify the specific group of women who use the CPI program. To measure mothers' labor market outcomes, I will use data from the Annual Household Survey (EAH), which is representative of the population of CABA but does not provide information on CPI program participation. To overcome the limitation of not having direct information on CPI program participation, I will use the information contained in the EAH about the region in which each mother lives. This will allow me to estimate the intention-to-treat (ITT) effects of the provision of public childcare using the quantity of CPIs at the year-region level, and the geographical location of each mother. The ITT effects should be interpreted as lower-bound values for the Average Treatment Effects (ATE) of the CPI program. To accurately estimate ITT effects, I must also identify an appropriate control group for each year-region combination. One possible approach is to use non-potential beneficiaries, which refers to mothers who reside in CABA and do not have children who are eligible to attend a CPI in a given year, as the control group. For

each year, this group is made of mothers of children who turn 3 years old on or before June 30th of previous year, and all children older than them. The disadvantage of using the non-potential beneficiaries group as the control group is that, for example, I would be giving equal weight to a mother whose child missed the program's eligibility cutoff by a month and a mother whose child is 10 years old. Ideally, one would want to compare the labor supply of mothers of children who are around the program's age eligibility limit. To exploit the discontinuity in eligibility around this well-defined cutoff and reduce subjectivity in choosing the control group, I will use a regression discontinuity design. The creation of a running variable is possible since the EAH contains information on the month and year of birth of each mother's last child. This approach will allow me to create a control group that is more comparable to the potential beneficiaries, and provide a better estimation of the impact of the increase in public childcare supply on labor market's behavior of mothers.

In the regression discontinuity setting, potential treatment is determined by an observed covariate -called running variable- being on right side of a fixed threshold: for year X, children who turn 3 years old on or after July 1th of year X-1, and all children younger than them, are eligible to attend to a CPI in year X. In contrast, children who turn 3 on or before June 30 of the previous year, and all children older than them, are not eligible to attend to a CPI in year X. Consequently, the running variable is defined as the number of months of age difference that the mother's youngest child has in a particular year, relative to the cutoff month for that year. For example, for year X, the running variable's value for a children who turns 3 years old on July of year X-1 is 1. On the other hand, the running variable's value for a children who turns 3 years old on June of year X-1 is -1. Mathematically,

$$D_{it} = \begin{cases} 1 & \text{if } X_{it} > 0 \\ 0 & \text{if } X_{it} < 0 \end{cases} \quad (1)$$



where  $D_{it}$  is an indicator variable equal to 1 if mother  $i$  is a potential beneficiary of the program at year  $t$  and 0 otherwise, and  $X_{it}$  is the running variable, which measures the number of months of age difference that mother's  $i$  youngest child has at year  $t$ , relative to the cutoff month for year  $t$ .

I estimate the effect of the CPI program using the following model:

$$Y_{itc} = \alpha_c + \gamma_t + f(X_{it}) + \beta D_{it} + \tau Z_{it} + \epsilon_{itc} \quad (2)$$

where  $Y_{itc}$  is the outcome variable,  $\alpha_c$  and  $\gamma_t$  indicate *comuna* and year's fixed effects respectively,  $f(X_{it})$  is a smooth function of the running variable  $X_{it}$  (which can change on either side of the cutoff),  $Z_{it}$  is a vector of control variables which includes age, income, relationship with the head of household, and education level. Finally,  $\epsilon_{itc}$  is an error term. I will consider two different outcome variables  $Y_{itc}$ : an indicator variable equal to 1 if the mother  $i$  is employed at time  $t$ , and an indicator variable equal to 1 if the mother  $i$  is a member of the workforce, i.e., if she has a job or is actively looking for one.

Although the running variable isn't strictly continuous, I still follow the local polynomial approach proposed by [Cattaneo, Idrobo, and Titiunik 2019](#). I use this method because, although it considers each mass point of the running variable as a single observation, the data used to create the running variable shows at least one observation in each of the months around the cutoff. This grants that the distribution of the mass points is as least sparse as it can be, conditional on the fact that data has monthly frequency, and the mass points aren't specially far from the cutoff.

The regression discontinuity methodology helps to overcome the source of endogeneity aris-

ing from the fact that the running variable may be correlated with mothers’ labor market outcomes. Due to the existence of this correlation, we cannot compare the outcomes of all potentially treated mothers with those of all untreated ones. The discrete rule defined by Equation 1 yields an “all else equal” setting between control and potentially treatment individuals around the cutoff and, thus, the estimation can have a high internal validity if we narrow in on a small slice of data around it. I estimate equation 2 using data within a narrow window around the cutoff point. The bandwidth selection is done following the methodology described by [Calonico et al. 2017](#), and the methodology yields local ITT estimations.

## 6 Results

### 6.1 Validity of the design

The validity of the chosen methodology relies on an important assumption: the “smoothness condition”. If the relationship between the running variable and the outcome variables is “smooth” around the cutoff in absence of the program, we can use the discontinuity to estimate the effect of the program on the outcomes at the cutoff. Given the fact that our database has two years in which no CPI was operational, a placebo test which uses those observations can be conducted to verify that the smoothness condition is satisfied.

[Table 2](#) shows the results of the placebo tests. Columns 1 and 2 show that there is no significant impact of threshold crossing for the observations corresponding to years 2006 and 2009 on the probability of being employed, as all estimates do not differ statistically from zero. Column 1 shows the estimation using a polynomial of degree 1, and column 2 with a polynomial of degree 2. Similar results hold for the estimations using the workforce participation as an outcome variable, shown in columns 3 and 4. Figures 5 to 8 plot the outcome variables against the running variable for each case presented in [Table 2](#). There is no evidence of discontinuities in the distribution of the outcome variables around the threshold.

Table 2: Placebo tests for employment status and workforce participation

	(1)	(2)	(3)	(4)
	Employment	Employment	Workforce	Workforce
RD estimate	-0.00204 (0.0499)	0.00318 (0.0699)	-0.0188 (0.0478)	-0.0282 (0.0645)
Observations	9,562	9,562	9,562	9,562
Controls	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Comuna FE	Yes	Yes	Yes	Yes
Polynomial degree	1	2	1	2

Standard errors in parentheses

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

Source: own estimations based on EAH and [Calonico et al. 2017](#)



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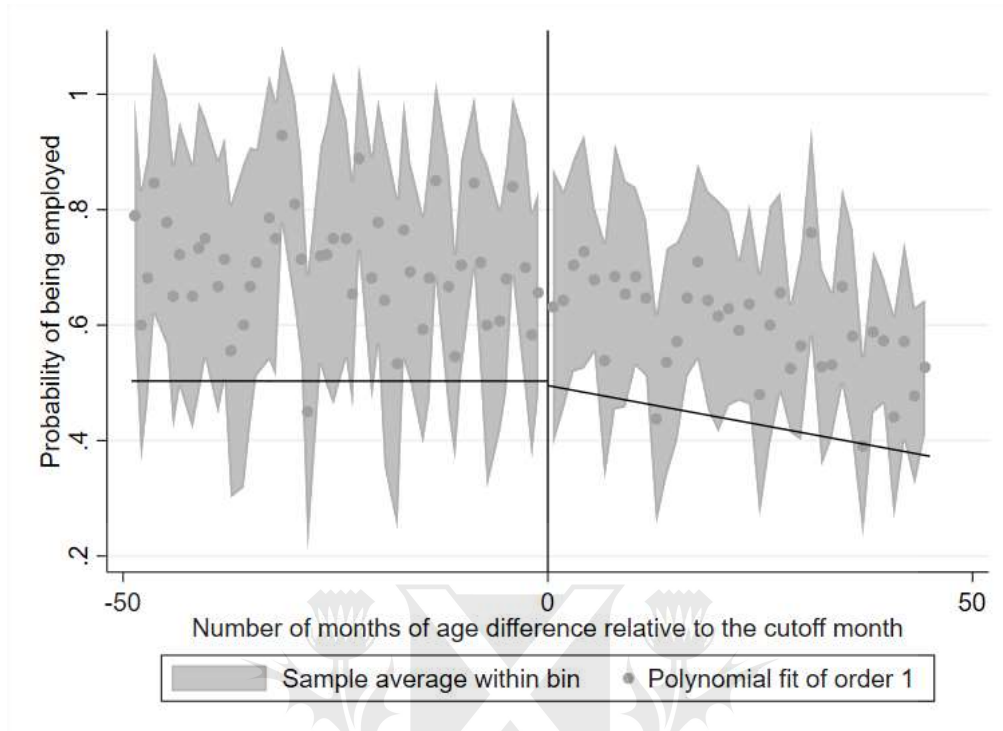


Figure 5: **Placebo test for employment status, Polynomial degree = 1**

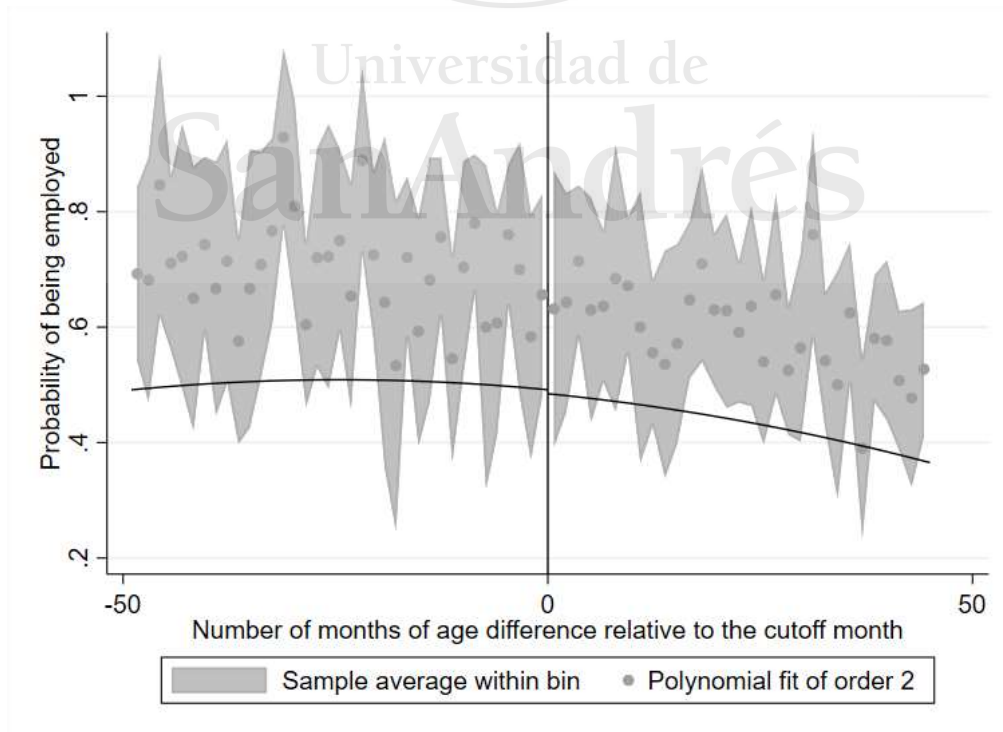


Figure 6: **Placebo test for employment status, Polynomial degree = 2**

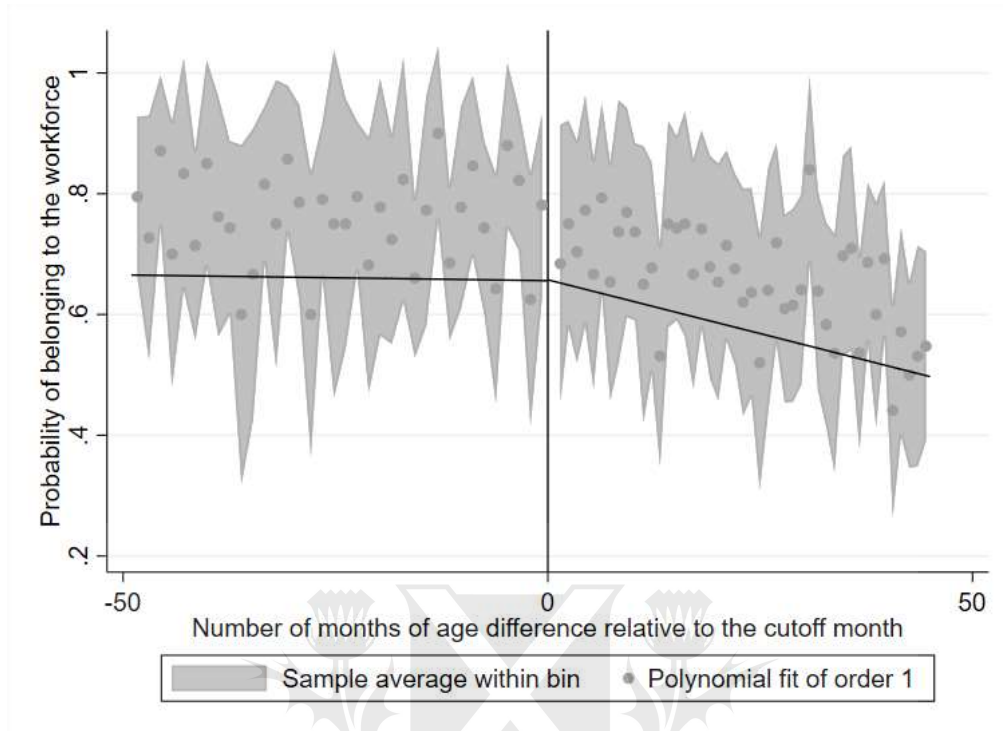


Figure 7: Placebo test for workforce participation, Polynomial degree = 1

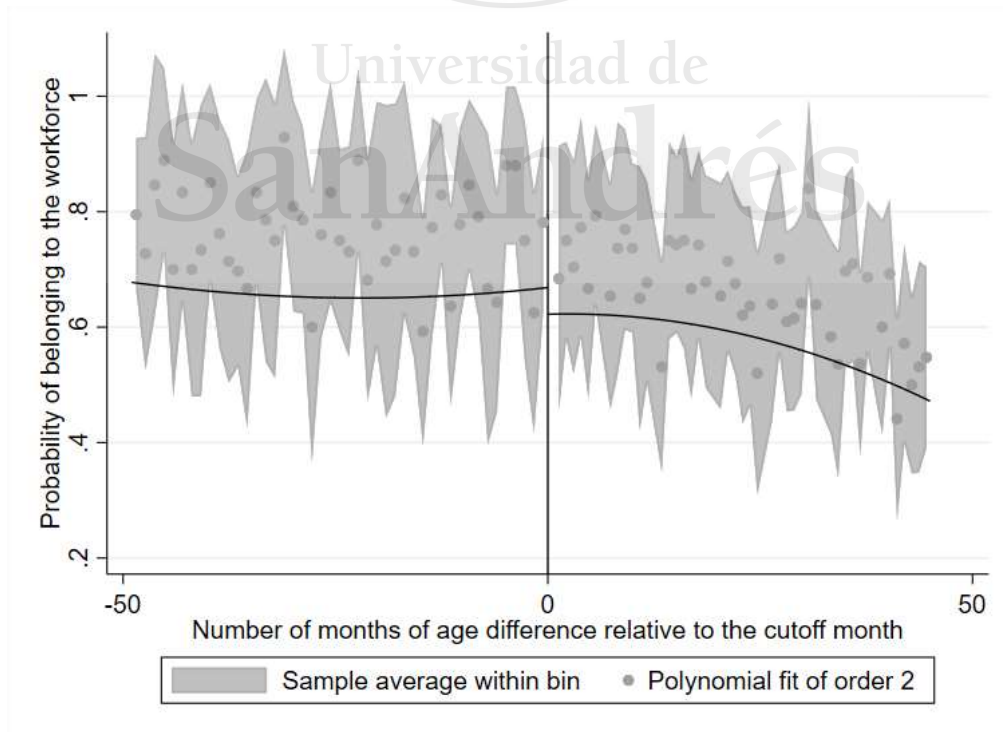


Figure 8: Placebo test for workforce participation, Polynomial degree = 2

## 6.2 Estimation

I conduct three different regression discontinuity estimations to investigate the impact of public childcare provision on mothers' labor market outcomes. I exploit the fact that the intensity of the treatment is different for each mother  $i$  at year  $t$  while living in *comuna*  $c$ . The source of the intensity is the quantity of operating CPIs in year  $t$  and *comuna*  $c$ . The first RD estimation restricts the sample and only considers observations whose quantity of operating CPIs is either 0 or 1. The second estimation considers observations whose quantity of operating CPIs is between 2 and 7. The third one considers observations whose quantity of operating CPIs is greater than 7. The classification was done in order to have a balanced number of observations under each category. This way, I can analyze the effects of the program under different levels of intensity and obtain a more comprehensive understanding of the program's impact on mothers' labor market outcomes. Mathematically, the classification of each observation is done by the following rule:

$$I_{itc} = \begin{cases} 1 & \text{if } Q_{itc} < 2 \\ 2 & \text{if } 1 < Q_{itc} < 8 \\ 3 & \text{if } Q_{itc} \geq 8 \end{cases} \quad (3)$$

where  $I_{itc}$  is a categorical variable that measures the intensity of the treatment, and  $Q_{itc}$  is the quantity of operating CPIs in year  $t$  and the *comuna* where the mother  $i$  lives.

Table 3: **Regression discontinuity estimates of employment status**

<b>Employment</b>	(1) <b>Intensity = 1</b>	(2) <b>Intensity = 2</b>	(3) <b>Intensity = 3</b>
RD estimate	0.00907 (0.0444)	0.129*** (0.0482)	0.0352 (0.0491)
Observations	17,271	13,815	9,869
Controls	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Comuna FE	Yes	Yes	Yes
Poly	1	1	1
Eff. N left of 0	774	885	822
Eff. N right of 0	982	1158	1101
Kernel	triangular	triangular	triangular

Standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Source: own estimations based on EAH and [Calonico et al. 2017](#)

[Table 3](#) displays the results of the regression discontinuity design conducted to estimate the effect of potentially being eligible for the CPI program on the probability of being employed. The analysis is performed on three different restricted samples depending on the quantity of operating CPIs in each observation. The local ITT estimations indicate that the effect of the treatment is economically significant and statistically different from zero for the sub-sample where the quantity of operating CPIs is between 2 and 7. This result suggests that the treatment has a positive impact on employment outcomes for those who are potentially eligible for the CPI program. More specifically, being potentially eligible for the CPI program increases the probability of being employed in 12.9 pp. It's important to emphasize that the ITT effects should be interpreted as lower-bound values for the ATE of the CPI program. The effect's causal interpretation is strengthened by the methodology's ability to establish an "all else equal" scenario between individuals who are potentially treated and those who served as the control group around the cutoff. By focusing on a small slice of data around the cutoff, the estimation can attain high internal validity.

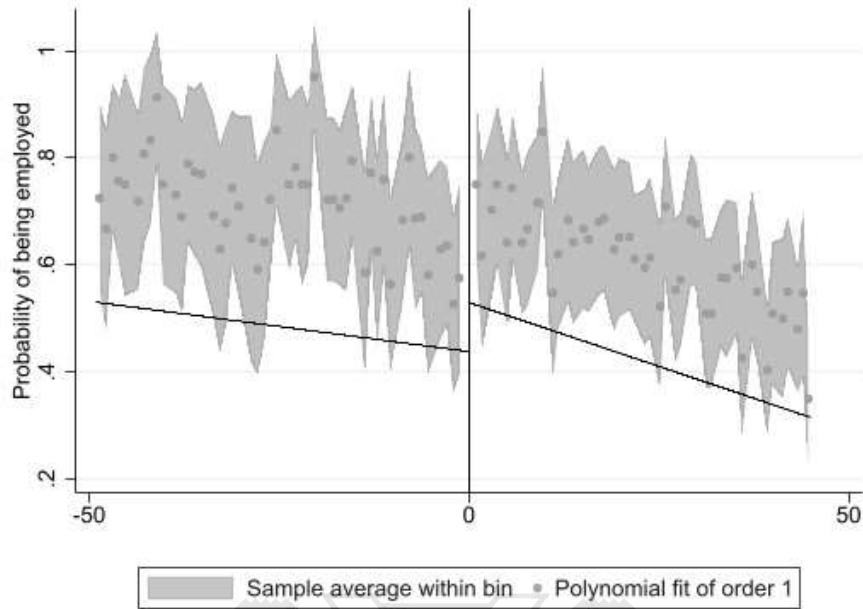


Figure 9: **Regression discontinuity estimates of the employment status with intensity = 2**

Figure 9 displays the standard regression discontinuity graph for the sub-sample of observations with 2 to 7 operating CPIs, which is the only group that yielded statistically significant results. The graph clearly illustrates the discontinuity around the cutoff point, with a jump in the probability of employment for mothers who are potentially eligible for the CPI program. The vertical distance between the two estimated  $f(X_{it})$  functions at the cutoff point represents the local ITT estimation of the effect, indicating that the program has a positive and significant impact on the probability of employment for this specific sub-sample.

Table 4 presents the results of the regression discontinuity analysis using an indicator variable for workforce participation as the outcome variable. The estimation was performed in the same sub-samples as before. The findings of this analysis are consistent with the previous one, as the estimated effects are economically significant and statistically different from zero when the quantity of operating CPIs is between 2 and 7. More specifically, being potentially eligible for the CPI program increases the probability of belonging to the workforce 9.67 pp. Therefore, we can conclude that the program has a positive impact on workforce participation



in this specific sub-sample.

Figure 10 displays the standard regression discontinuity graph for the sub-sample of observations with 2 to 7 operating CPIs with workforce participation as the outcome variable.

Table 4: **Regression discontinuity estimates of workforce participation condition**

Workforce	(1) Intensity = 1	(2) Intensity = 2	(3) Intensity = 3
RD Estimate	0.00303 (0.0395)	0.0967** (0.0454)	0.0507 (0.0459)
Observations	17,271	13,815	9,869
Controls	Yes	Yes	Yes
Year FE	Yes	Yes	No
Comuna FE	Yes	Yes	Yes
Poly	1	1	1
Eff. N left of 0	850	838	802
Eff. N right of 0	1053	1110	1048
Kernel	triangular	triangular	triangular

Standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Source: own estimations based on EAH and [Calonico et al. 2017](#)

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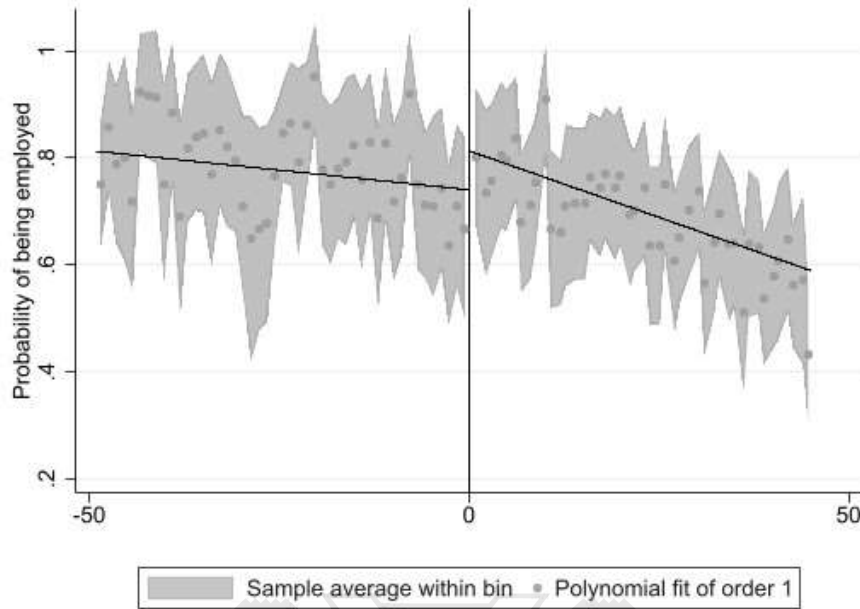


Figure 10: **Regression discontinuity estimates of workforce participation condition with intensity = 2**

## 7 Conclusion

While some research has delved into the connection between public childcare policies and mothers' labor market supply, findings are scarce within developing countries, and largely inconclusive for the developed ones. Moreover, these policies often present challenges in determining causal effects, given the inherent difficulty in identifying exogenous variation and defining a suitable counterfactual. This study contributes to the existing literature by offering evidence from Argentina, a developing nation, on the effects of the CPI Program on mothers' labor market outcomes.

To exploit the discontinuity in eligibility for the CPI program around a well-defined cutoff and reduce subjectivity in choosing the control group, I use a regression discontinuity design to estimate the effect of being potentially eligible for the CPI program on mothers' labor market outcomes. I find two main results: for the sub-sample where the quantity of operating CPIs is between 2 and 7, being potentially eligible for the CPI program increases the probability

of belonging to the workforce by 9.67 percentage points. Furthermore, it increases the probability of being employed by 12.9 percentage points. These results have been found to be both economically and statistically significant. Overall, the results provide evidence of the effectiveness of the CPI program in increasing labor market participation and employment for mothers with young children. It also contribute to the existing literature on public childcare policies and suggest that public childcare supply policies could be a key tool to eliminate gender barriers in the labor market.

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