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Conditional Cash Transfers and Intimate Partner Violence among Mexican Couples: the Impact of *Oportunidades* on Psychological Abuse Prevalence

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Abstract: Existing economic literature demonstrates that gender-oriented conditional cash transfer programs modify women's economic opportunities and consequently, their power status within their households. Nonetheless, these studies are not conclusive in determining whether or not this improved position of power has the potential to significantly alter the chances of women to suffer from intimate partner violence. By applying a series of *difference-in-differences* and *propensity score matching* techniques to data on the Mexican Family Life Survey, this paper investigates the impact of the Mexican program *Oportunidades* on a novel indicator of emotional abuse among intimate partners. Results demonstrate that women in households that are eligible for participation into *Oportunidades* are less likely to suffer from psychological violence by the hands of their couples, an effect that becomes even stronger when those households actually participate into the program. When assessing the potential heterogeneity of such an impact, however, this relationship appears to exclusively hold within the urban setting.

Key words: women, conditional cash transfers, decision-making power, intimate partner violence, contraceptives, *Oportunidades/Progres*a.

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1. Introduction

The concept of intimate partner violence comprehends all those physical, sexual, and psychological harming behaviors perpetrated against girls and women by their intimate partners during the course of their private lives. Nowadays, this form of violence is present in every country, and it spreads across age ranges, cultures, races, and socioeconomic levels. Far from being eradicated, the scale of the problem still remains at highly concerning levels, and has become a major issue within the agenda of international organizations and governments around the world.

Mexico is one of the countries of the world in which intimate partner violence represents a more serious problem. Indeed, according to the National Institute of Statistics and Geography (INEGI, 2011), around eleven million of Mexican women report having experienced at least one violent episode during their lives as a couple. In particular, 25.8% of them mention to have suffered some form of physical violence; 11.7% confess the occurrence of episodes of sexual abuse; and around 89% report having been subject to some sort of psychological violence from their intimate partner.

The latter figure is of special relevance for the aim of this paper. Despite the fact that more social and political awareness is often raised around physical and sexual violence due to their more tangible character, the impressive levels of psychological abuse reported by Mexican women have made this sort of violence become a core piece in the policy-making of the country in the last couple of decades. This is probably why, most recent laws and other legal instruments aimed to tackle intimate partner violence already count with particular sections solely dedicated to the analysis and prevention of psychological abuse within the couple.

1.1. Research Question and Contributions to the Field

Although the enactment of legislative and executive measures has been a common tool used by the Mexican government in the fight against intimate emotional abuse in recent years¹, this paper aims to investigate the potential effect that other public interventions such as gender-oriented cash transfer programs can have on the reduction of this form of violence among Mexican couples.

In particular, this study investigates whether or not, participation into the social program *Oportunidades* is likely to significantly alter the prevalence of psychological violence among those couples that benefit from the program. The direction of such an effect, when existent, is analyzed as well.

Existing economic theory seems to agree that conditional cash transfer programs in which funds are given

¹As a matter of example:
Law of Assistance and Prevention of Intra-Family Violence in Mexico City (Ley de Asistencia y Prevención de la Violencia Intrafamiliar para el D.F.; 8 Agosto 1996)
General Law on the Access of Women to a Life Free from Violence (Ley General de Acceso de las Mujeres a una Vida Libre de Violencia; 19 Diciembre 2006)
Mexican Regulation on Family, Sexual, and Violence Against Women (Norma Oficial Mexicana sobre Violencia Familiar, Sexual y contra las Mujeres; 29 Noviembre 2007)

to women tend to improve women's status within the power structure of their households (Adato et al., 2000; Quisumbing & Maluccio, 1999), but no final conclusions have been reached on how this improved position relates to the exhibition of violent behaviors from their couples. Indeed, the results obtained by current research on the relation between participation into Oportunidades and the prevalence of intimate partner violence among Mexican couples are scarce and considerably mixed. While certain authors find a positive correlation between participation into the program and a reduction in the probability of women of suffering physical abuses from their couples (Angelucci, 2008; Bobonis & Castro, 2010), empirical findings with respect to psychologically violent episodes are not that optimistic (Bobonis, Castro, and González-Brenes, 2013).

Accordingly, this study aims to throw some light on the issue by contributing to the existing literature in two different manners.

First, the empirical analyses presented in this paper use a novel indicator of intimate partner violence that has not been used before: the extent to which a woman actively participates in making decisions relative to the use of contraceptive methods. By using this variable as an indicator of women's suffering of psychological abuse, this study aims to reduce the chances of obtaining downward biased estimates of the program impact on the prevalence of intimate partner violence. In fact, feelings of shame and fear of retaliation are less likely to influence responses regarding the use of contraception than those relative to the suffering of more explicit violent behaviors such as being beaten or coerced to have sexual relations, which provides more reliability to the outcome variable of interest (Chin, 2012; Garcia-Moreno et al., 2006; Hidrobo & Fernald, 2013).

Secondly, this study is first in using household and community-level data on the Mexican Family Life Survey to evaluate the impact of Oportunidades on the prevalence of intimate partner violence among Mexican couples. The unique panel structure of the survey, which follows Mexican individuals between 2002 and 2005, facilitates the combination of a *difference-in-differences* approach with more traditional *propensity score matching* techniques, which provides an element of additional consistency to estimates of the program's impact that has not been achievable before.

My results show that women in households that are eligible for participation into Oportunidades are more likely to actively participate in making decisions over the use of contraceptives, which indicates that they are subject to lower levels of psychological abuse by the hands of their intimate partners, in comparison to women residing in non-eligible households. This effect becomes larger when households' status of actual participation into the program is taken into account. Nonetheless, further robustness analyses demonstrate that the existence of a significant association between eligibility/participation into Oportunidades and intimate partner violence exclusively holds within the urban setting, but cannot be assured for the case of rural households.

The remaining of the paper is structured as follows. Section 2 defines the specific concept of intimate partner

violence that constitutes the basis of this study. Section 3 describes the theoretical framework that supports this investigation. Section 4 introduces the program Oportunidades and its implementation process. Section 5 describes the data and methodology used in the analysis, while Section 6 provides the main empirical results. Finally, Section 7 concludes.

2. Intimate Partner Violence: Psychological Abuse and Women's Decision on the Use of Contraceptives

Following the United Nations Declaration on the Elimination of Violence Against Women (1993), the term *domestic violence* comprehends any act of gender-based violence that takes place in private life and results in physical, sexual, or psychological harm to girls and women. The definition is therefore restricted to those acts of violence that take place within the family, and excludes those that occur in public life. When this definition is further restricted as to solely focus on those violent behaviors perpetrated by women's intimate partners and no other family members, the specific concept of *intimate partner violence* arises (Cheston & Kuhn, 2002).

Intimate partner violence can take considerably different forms, which range from physical abuse (murder, beating, stabbing, slapping...) and sexual harassment (coerced sex), to more subtle forms of psychological mistreatment. Although physical and sexual violence tend to raise greater social and political awareness due to their tangible component, the significant prevalence of psychological forms of abuse among domestic partners should not be underestimated.

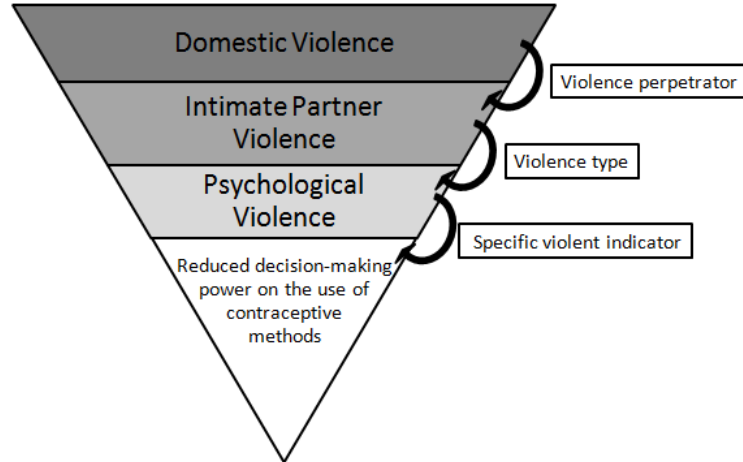
Psychological violence² includes all sorts of attitudes that are intended to intimidate and subordinate the woman to the man, and that tend to eventually leave her in a powerless position within the household (Cheston & Kuhn, 2002; UNICEF, 2000). Thus, there exist a wide range of behaviors prone to be classified into the category of psychological violence³ (Bobonis & Castro, 2010), but this paper particularly focuses on the diminished participation of women (in relation to that of their intimate partners) in the decision-making process on the use of contraceptives. Figure 1 graphically depicts the existing relations among all the aforementioned concepts in order to facilitate their understanding.

Impeding or eroding women's participation in the negotiation and decision-making of key issues for the development of their personal lives is one of the most basic forms in which men can psychologically abuse their intimate partners. Thus, denying women the possibility of negotiating safer sexual relations and the use of contraceptive measures to achieve their desired fertility goals is a clear indicator of emotional abuse (UNICEF, 2000). Despite its significance, and as far as I am concerned, using women's decision power on the use of contraceptives as an indicator of the suffering of emotional violence from their intimate partners is a novelty

²Also referred to as emotional violence.

³For example: scarring, humiliation, insults, forced isolation from relatives and friends...

Figure 1: Psychological Abuse and Women's Decision-Making Power on the Use of Contraceptives



Source: Original from author

within the literature. This seems paradoxical, because establishing the extent to which a woman is prevented from making her own decisions on the use of contraceptives as a measure of intimate partner violence is particularly beneficial for one special reason: self-reported responses to questions about contraceptive choices are likely to be more reliable than those to more direct questions about other violent behaviors such as being beaten or coerced to have sexual relations. Nowadays, most currently available data on the perpetration of violent behaviors against women by their intimate partners is widely considered highly unreliable (Chin, 2012; Garcia-Moreno et al., 2006; Hidrobo & Fernald, 2013; UNICEF, 2000). Given the delicacy of the topic, and even disregarding common threats to household survey information such as question design and sample representativeness, questionnaires on this type of violence are believed to contain a considerable degree of inaccuracy and bias on their responses. Feelings of shame and fear of further episodes of violence often make women refuse to answer certain questions, and when responses are given, these are likely to under-report the frequency or intensity of violent behaviors perpetrated by their intimate partners.

In conclusion, one of the main contributions of this paper is that it uses the degree of a woman's participation in the decision-making process on the use of contraceptives as an indicator of her potential suffering of emotional abuse from her couple. By doing so, this study aims to reduce the chances of obtaining downward biased information on the incidence of intimate partner violence, a problem that commonly arises when outcomes of interest are constructed from self-reported responses to delicate questions such as those relative to violent behaviors within the household.

3. Gender-Oriented Conditional Cash Transfers Programs and Intimate Partner Violence

The theoretical framework under which this paper develops is graphically summarized on Figure 2, and as it can be seen, it builds on two different sections of the economic literature. First, those studies that demonstrate that participation into a conditional cash transfer (CCT) program in which funds are disbursed to women have a positive effect on the position occupied by women within the power structure of their respective households. Second, a section of the literature that investigates whether this improved status is likely to have a significant impact on the degree of intimate partner violence which the woman is subject to, and if so, the potential direction of that effect.

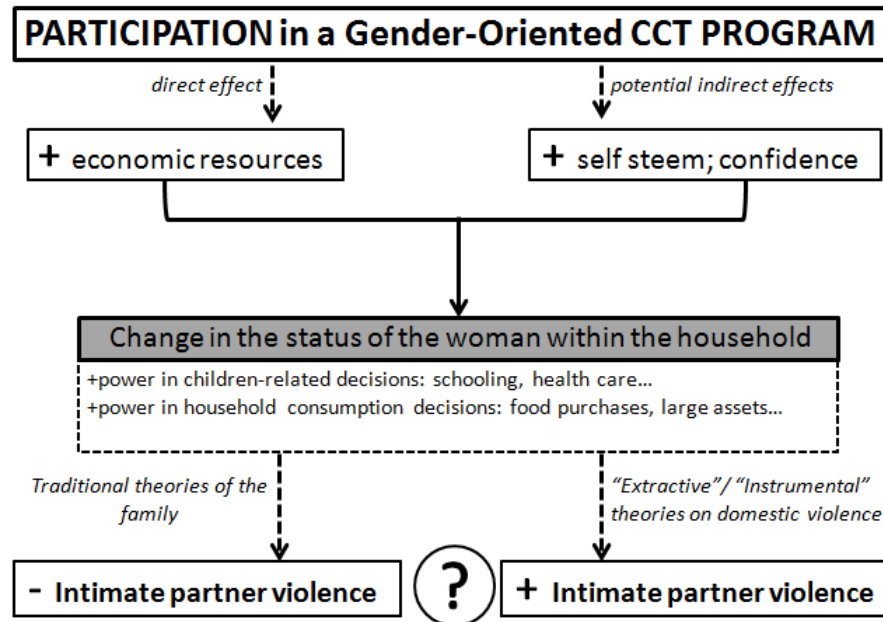
3.1. CCTs and Women's Intra-Household Status

Due to the inter-relatedness of a wide range of different economic, social, and cultural variables, disentangling which factors determine the power position of a women with respect to other household members is an extremely complex task. Nonetheless, most studies on the topic agree with the idea that enlarged economic opportunities for women have an undeniable influence on the improvement of such a position (Cheston & Kuhn, 2002; Heise, 2011; Quisumbing & Maluccio, 1999; UNICEF, 2000). For these authors, control over an increased amount of economic resources in hands of women generates significant changes on the existing relations of power and decision-making among the members of the household. By providing more resources to her family, the perceived status of the woman within the household changes, her bargaining-power increases, and so does her level of participation in the decision-making process of certain family-related issues.

One of the most common ways by which women in developing societies can experience a considerable increase in their available economic resources is through the participation into CCT programs in which funds are exclusively disbursed to women. These gender-oriented CCTs, widely spread throughout Latin America in the last decades, build on the belief that directly handing cash to women is likely to generate larger improvements in children's education and health than if it were men who eventually controlled the granted resources (Adato et al., 2000; Thomas, 1990; Vyas & Watts, 2009), which makes them a powerful tool to reducing poverty and increase human capital in developing countries (Hidrobo & Fernald, 2013). But, despite the original intention of such a peculiarity in the design of these sorts of programs, gender-oriented CCTs increase the amount of economic resources in hands of women, and consequently have a key influence in the modification of those women's intra-household status.

Besides granting increased economic resources to the female head-of-household, gender-oriented CCTs are

Figure 2: Gender-Oriented CCT Programs and Intimate Partner Violence: Theoretical Framework



Source: Original from author

susceptible to further reinforce the power status attained by women in other indirect manners as well. One of them is the fact that the receipt of cash amounts coming from these interventions is subject to the fulfillment of certain obligations by the beneficiary women. In most occasions, these requirements take the form of periodical and highly formative information sessions, which not only improve women's education in certain topics of social awareness, but also enable them to interact with other women and share common experiences and concerns. By doing so, CCT programs are likely to improve the confidence and self-esteem of participant women, and thus, reinforce the intra-household empowerment effect already generated by the receipt of monetary transfers (Adato et al., 2000).

Empirical evidence across countries in Latin America demonstrates such a positive association between participation into CCTs and women's improved intra-household status. For example, participation into the Brazilian program *Bolsa Familia* has been demonstrated to considerably increase women's bargaining power with respect to schooling and health decisions for children, as well as to the purchase of certain durable household goods (de Brauw et al., 2013; Suarez & Libardoni, 2007). In the same way, Gitter and Barham (2008) utilize randomized experimental data from the program *Red de Protección Social* in Nicaragua to demonstrate that participating women have a more active role in making decisions regarding food purchases for the household. An increase in participation in consumption-related decisions is also found in the case of beneficiary women of the program *Chile Solidario* (Larrañaga, Huepe, & Marinho, 2009). Finally, Adato et al. (2000) use data on the Mexican program *Progresá* to defend that beneficiary women have higher chances of participating in

the decision-making process regarding children's schooling and household's large purchases than non-beneficiary mothers.

3.2. Women's Intrahousehold Status and Intimate Partner Violence

Despite the positive effects that participation into gender-oriented CCT programs seems to have in the reinforcement of women's perceived intra-household status, the direction of the relation between this improved position of power and women's experience of violent behaviors from their intimate partners is far from straightforward.

On the one hand, one section of the economic theory defends that women that do not heavily economically depend on their couples and benefit from a more equal power balance with their intimate partners are less likely to suffer from episodes of violence by hands of the latter (Farmer & Tiefenthaler, 1997; Bobonis, Castro, and González-Brenes, 2013). These authors base their hypothesis on traditional theories of the family in which men choose the level of violence to perpetrate towards their significant mates that maximizes their personal utility. In the same way, the degree of violence that women are willing to accept from their intimate partners depends on both the income flows transferred by their couples and the utility they perceive they could obtain by leaving their current relationships. When a woman's position within the power structure of the household strengthens, the utility obtained from her partner's transfers decreases, the perceived utility of leaving the relationship increases, and the violence level that she is willing to accept falls. Thus, according to these authors, interventions that have the ability to significantly improve the power position of women within their households (for example, CCTs) would have the potential to reduce the probability of those women of suffering from any form of intimate partner violence. In particular, beneficiary women would be expected to participate more actively in the decision-making process over the use of contraceptives than non-beneficiary women, or what is the same, to be subject to lower levels of psychological abuse from their couples.

On the other hand, another section of the literature relies on what is known as *extractive* or *instrumental* models on domestic violence (Bloch & Rao, 2002; Hidrobo & Fernald, 2013) to defend a positive relationship between women's increased intra-household status and the suffering of intimate partner violence. These authors defend that by gaining a more powerful intra-household position, women are likely to challenge the implicitly established gender norms of the couple, which supposes a threat to the previously dominant position of the male partner. Men in this sort of situation are more prone to turn to violence as a way to reinstate their role within the household and in relation to their wives, which can then lead to more frequent and intense abusive behaviors towards their partners (Cheston & Kuhn, 2002; Macmillan & Gartner, 1999; Vyas & Watts, 2009). Consequently, these authors defend that programs that enable women to reach a more powerful intra-household position by means of increasing their economic possibilities could unintentionally increase their chances of being somehow abused by their partners. According to these theories, women that benefit from gender-oriented CCTs

would be less likely to participate on decisions over the use of contraceptives than non-beneficiary mothers, which would be an indicator of the higher levels of intimate psychological violence to which they are subject.

Current research on the relation between participation into gender-oriented CCTs and the prevalence of intimate partner violence is extremely scarce and restricted to certain Latin American countries. Even where empirical evidence does exist, results are inconclusive, and corroborate the mixed predictions made by the economic literature. For example, while different evaluations of the Peruvian intervention *Juntas* seem to demonstrate that participation into the program significantly reduces women's probabilities of experiencing physical and psychological abuses from their couples (Jones, Vargas, & Villar, 2007; Molyneux & Thomson, 2011; Perova, 2010), results are not that optimistic in the case of other CCTs. In fact, Hidrobo and Fernald (2013) do not find a significant association between participation in the program *Bono de Desarrollo Humano* in Ecuador and the experience of intimate partner violence by beneficiary women, whereas Molyneux and Thomson (2011) provide female testimonies of having been victims of this type of violence as a result of their participation into the Ecuadorian program. In the case of the Nicaraguan program *Red de Protección Social*, there is no evidence of significant changes in intimate violent behaviors associated to participation in the program (Adato & Roopnaraine, 2004; Maluccio & Flores, 2004).

With respect to Mexico, certain authors use first-hand qualitative information to assure that participation into Progreso cannot be related to increased episodes of violence against women within their households (Adato et al., 2000; Escobar & González de la Rocha, 2005). These statements are corroborated by Angelucci (2008) and Bobonis and Castro (2010), who use experimental data from the evaluation of Oportunidades to demonstrate that participation into the program significantly reduces the probability of women of suffering physical abuses from their couples. Nonetheless, Bobonis, Castro, and González-Brenes (2013) specify that although program participation reduces the probability of suffering physical violence in the short term, this negative association seems to disappear between five and nine years since the first cash transfer. Moreover, these positive results do not hold in relation with psychological violence, which presents larger prevalence rates for the group of participant households than for the non-participants.

Ultimately, existing economic theory seems to agree that gender-oriented CCTs improve the status of beneficiary women within the power structure of their households in a series of direct and indirect ways, but no final conclusions have been reached on how this improved position relates to the exhibition of violent behaviors by the hands of women's intimate partners. Accordingly, empirical research on the relationship between participation into the Mexican program Oportunidades and intimate partner violence is still scarce, and presents considerably mixed results. Such studies tend to be based on the analysis of qualitative information obtained from personal interviews and focus groups, and in the cases where quantitative methods come into place, the

application of traditional OLS methodologies to cross-sectional Mexican surveys arises as the common tool to obtain the program's impact estimates.

Therefore, this study aims to throw some light on the issue by investigating whether or not participation into Oportunidades is likely to significantly alter the prevalence of psychological violence among those couples that benefit from the program. Two are the main contributions of this paper to the existing research. First, the use of a novel indicator of psychological abuse based on the extent to which a woman actively participates in making decisions relative to the use of contraceptive methods. Second, the econometric methodology utilized to perform such an investigation: this study is pioneer in applying a combined *difference-in-differences* approach with more traditional *propensity score matching* techniques to a longitudinal household survey in order to provide consistent estimates of the program's impact on the variable of interest.

4. The Social Program Oportunidades

4.1. Program Description

In August of 1997, and under the name of Progres⁴, the Mexican government established a nationwide, anti-poverty program whose main goal was to improve human development in the country by investing in the education, health, and nutrition of Mexican children living below the Minimum Well-Being Line (Bobonis, Castro, and González-Brenes, 2013). Program's coverage was initially restricted to the rural poor, and by 1999, almost 2.6 million families were already benefiting from it. Five years after its first implementation, the program was renamed Oportunidades and extended geographically so as to cover semi-urban and urban areas, reaching more than 5 million Mexican families by the year 2005 (Palermo & Braymen, 2010).

Although similar programs had been implemented before⁵, Oportunidades is the first social intervention at the national level that, given its particular design, has the potential to significantly change women's intra-household status in a number of different direct and indirect ways (Adato et al., 2000).

First of all, the main component of the program consists in bi-monthly cash transfers exclusively received by the mother of the participant family⁶ (Bobonis, Castro, and González-Brenes, 2013). The fact that monetary transfers are deliberately and directly disbursed to the female heads-of-households is a unique feature of this program, and the most clear way through which Oportunidades can have a significant influence on the role played by women within their households. Following existing literature, by disbursing periodical cash transfers to the female head-of-household, the program increases available economic resources in the hands of women, which ultimately modifies their perceived position within the power structure of the household.

⁴Programa de Educación, Salud y Alimentación.

⁵*Pronasol* (Programa Nacional de Solidaridad) was pioneer and operated in the country from 1988 to 1994.

⁶The program also provides other in-kind health benefits such as nutritional supplements for children, but these will not be matter of study in this paper.

Secondly, the reception of the aforementioned transfers is conditional on the discharge of a series of obligations by the participant women. In fact, in order to maintain the beneficiary status, children of participant women must be enrolled in school and periodically taken to health visits. Women must also contribute to program activities with a certain number of work hours, and attend *pláticas*, or health promotion workshops, in a monthly manner (Bobonis, Castro, and González-Brenes, 2013). As already stated in the literature, this imposition of attending regular health seminars is another indirect mechanism through which Oportunidades can empower women within their households. *Pláticas* enable mothers to regularly meet with other beneficiaries of the program, which allows them to share common experiences and concerns, and improve their communication skills (Adato et al., 2000). These practices are likely to increase women's self-esteem and confidence, reinforcing this way the already empowering effect of the granted cash transfers.

Finally, the central role that women play in the design and development of Oportunidades is likely to make them feel they are deserving of a higher status within their households (Adato et al., 2000). In Oportunidades, the Mexican government openly puts women in the center of the intervention and recognizes their key importance in providing a better future for their families. It is this high-level recognition that therefore motivates women to demand a similar recognition within their households as well.

4.2. Program Implementation

Since its origins, participation into Progresa is determined by following a considerably clear two-stages process. First, localities⁷ in which the program is to operate are selected based on their respective Social Marginalization Index⁸ and Social Backwardness Index (SBI)⁹, which serve to identify those extremely poor areas for which the need of the program implementation is more acute. After that, and based on socioeconomic information collected through household-level questionnaires, families within the chosen communities are assigned with an estimation of their respective income per capita. Household participation is then decided in a case by case basis by comparing income per capita estimates with the exogenously established Minimum Well-Being Line (Bobonis, Castro, and González-Brenes, 2013).

A key feature of this selection process is that not every household residing in a community where the program is implemented and with an estimated income per capita below the Minimum Well-Being Line, finally participates into the program. Instead, the incorporation of a household eventually depends on the budget possibilities of the Mexican Ministry of Social Development (SEDESOL, 2014). This budgetary restriction is

⁷Mexico has 31 states, each of which is subdivided into autonomous *municipios* or municipalities. Each municipality is in turn subdivided into a series of localities, or smaller communities. In total, Mexico counts with 2,454 municipalities and almost 200,000 localities (INEGI, 2008).

The terms *locality* and *community* are used indistinctly in this paper.

⁸Or *Índice de Marginación Social*. This monotonically positive index is constructed by the National Population Council (CONAPO) by aggregating information on nine different forms of social exclusion at the state level. The higher the percentage of the index, the higher the degree of marginalization of the geographic area of interest (CONAPO, 2011).

⁹Or *Índice de Rezago Social*. This index is constructed by aggregating information on four different forms of social exclusion at the state and municipality levels. The higher the index, the higher the degree of backwardness of the geographic area of interest.

key for the identification strategy of this paper, since for specific values of certain socioeconomic characteristics, it is possible to distinguish both participant and non-participant households¹⁰.

It is also important to highlight that with the program expansion in 2002, a significant modification was introduced in relation to the second stage of this incorporation process. Since that moment, once targeted localities have been chosen for implementation, households interested in participating into the program are now responsible for attending local offices and start the process of application for the program themselves. The collection of socioeconomic information and estimation of a household's income per capita is therefore exclusively performed for those households that decide to initiate the application. This modification in the implementation process is considerably relevant from an impact evaluation point of view, since it introduces an element of self-selection into the program that will be further discussed in following sections¹¹.

5. Data and Methodology

5.1. Data Sources

To empirically investigate my theoretical predictions, I combine socioeconomic data on Mexican households with aggregated information on the respective localities where those households reside.

All household-level data and most of the community-level data comes from the first (2002) and second waves (2005/2006) of the Mexican Family Life Survey (MxFLS): a multidimensional and longitudinal database that collects information on approximately 35,000 individuals, 8,440 households, and 150 municipalities in Mexico (MxFLS, 2014).

The decision of using this particular household survey for the present study is given by several reasons. First, the stratified, multi-staged, and independent character of the survey sample makes it particularly suitable as a representation of a wide range of socioeconomic, demographic, and health-related indicators of the Mexican population at the national, regional, and rural-urban levels. Secondly, its multi-thematic character facilitates the analysis of potential relations among different socioeconomic phenomena of interest, such as the link between participation in Oportunidades and the bargaining power exercised by Mexican women within their couples on the use of contraceptive methods. Finally, the MxFLS follows Mexican individuals throughout time¹², being the only currently available Mexican survey that collects longitudinal information on particular indicators of intimate partner abuse, such as the diminished decision power of women over their own sexual choices.

Despite these undoubtedly beneficial characteristics, the MxFLS presents a significant drawback for the evaluation purposes of Oportunidades: data on participation into the program at the household-level is exclusively

¹⁰See Section 5.3.

¹¹See Section 5.3.

¹²The second wave (2005/2006) achieved a 90 per cent re-contacting rate at the household level.

available for the first wave of the survey (Palermo & Braymen, 2010; MxFLS, 2014). For the 2005/2006 round, however, the only existing information about participation in Oportunidades comes at the community level. Thus, information on households' potential exposure to the program is available for both 2002 and 2005, but data on their actual participation status is not. This particularity has a determinant effect in the choice of econometric methodologies used in the following empirical analyses, which I describe below in more detail¹³.

Locality-level information is completed by incorporating data on each community's SBI¹⁴, which has been obtained from the data repository of the National Council for Evaluation of Social Development Policy (CONEVAL, 2014).

5.2. Data Description

To construct a measure of the prevalence of psychological intimate-partner violence within a household, I use individuals' answers in the MxFLS to the following question: *“generally speaking, in this household, who takes the decisions regarding if you or your spouse/couple use contraceptives (for not having children)?”*, to which possible responses are *“respondent”, “spouse”, “children”, “mother”, “father”, “mother in law”, “father in law”, “brother”, “sister”, “brother in law”, “sister in law”, “grandparents”, and “do not know”*.

With the information obtained from individual responses to that question, I construct a dependent indicator variable at the household-level, *power*, that equals one if the woman of the household is mentioned to somehow taking part in the household's decision process over the use of contraceptives (either by herself, jointly with her couple, or jointly with another household member), and zero otherwise. Observations of single-headed households, households without children¹⁵, and households in which survey respondents answered *“do not know”* are dropped.

With respect to the covariates of interest, Table 1 provides names, definitions, and descriptions of all the variables that will be part of the following analyses.

5.3. Identification Strategies

This study builds on household and community-level data from the first and second waves of the MxFLS. Given the longitudinal character of the survey, the most desirable impact evaluation of Oportunidades on the prevalence of intimate emotional abuse would consist in the comparison of the dependent indicator variable *power* between participant and non-participant households in 2002 and 2005, respectively. This would lead to the obtainment of the Average Treatment Effect on the Treated (ATT), that is, the average effect of participating into Oportu-

¹³See Section 5.3.

¹⁴According to Benita & Gómez (2013), the SBI incorporates the same information than its preceeding *Índice de Marginación Social*, but it is constructed at a more disaggregated level. This makes it more accurate for analysis purposes, since it does not assume within-state homogeneity.

¹⁵According to the Operating Rules of the Human Development Program Oportunidades (SEDESOL, 2014), having children under the age of eighteen is a fundamental pre-requisite for a household to become beneficiary of the program.

Table 1: Names and Definitions of Covariates of Interest

<i>Var. Name</i>	<i>Var. Definition</i>	<i>Var. Description</i>
log_members	Logarithm of the total number of household members.	—
dependency	Demographic Independence Index.	Ratio between the total number of household members aged under 15 or over 64, and the total number of household members aged between 15-64.
schooling [1]	Average schooling of household head and spouse.	Average number of years of complete schooling attained by the household head and his/her spouse [2].
remittances	Reception of remittances by the household.	Dummy variable that takes value one if the household receives remittances from family or friends living abroad, and zero otherwise.
property [1]	Dwelling's ownership status.	Dummy variable that takes value one if the dwelling where the household members inhabit is owned by any of them.
rooms [1]	Total number of rooms within the dwelling.	—
telephone	Telephone ownership.	Dummy variable that takes value one if the dwelling has a telephone, and zero otherwise.
electric	Electric appliances ownership.	Dummy variable that takes value one if the dwelling has electric appliances, and zero otherwise.
electronic	Electronic appliances ownership.	Dummy variable that takes value one if the dwelling has electronic appliances, and zero otherwise.
floor	Physical condition of the dwelling's floor.	Dummy variable that takes value one if the dwelling's flooring type is firm cement, and zero otherwise.
water [1]	Independent access to water for bathing and washing.	Dummy variable that takes value one if the main source of water for bathing and washing is within the dwelling, and zero otherwise.
car	Car ownership.	Dummy variable that takes value one if the household owns a car, and zero otherwise.
fuel	Use of fuel for cooking.	Dummy variable that takes value one if the household uses fuel to cook, and zero otherwise.
rural [1]	Rural character of the locality where the household resides.	Categorical variable that takes value 1 if the community has a population of more than 100,000; 2 if between 15,000 and 100,000; 3 if between 2,500 and 15,000; and 4 if less than 2,500.
marginality [1]	Community's index of social backwardness.	Continuous variable that informs about the degree of social backwardness of the locality where the household resides. It ranges from -3 to 3.

[1] These variables are the only ones that enter the analysis for ATT estimation purposes.

[2] Variable constructed based on the responses to the question: "which is/was the last level of schooling you attended?", to which possible responses are "without instruction", "preschool or kinder", "elementary", "secondary", "open secondary", "high school", "open high school", "normal basic", "college", "graduate", and "do not know".

The number of complete schooling years attained by both the household head and his/her spouse is calculated following the equivalency established by the Dirección General de Relaciones Internacionales de México (Mexterior, 2014):

Without instruction: 0 years

Completed preschool or kinder: 3 years

Completed elementary: 9 years

Completed secondary or open secondary: 12 years

Completed high school or open high school: 15 years

Completed college: 20 years

Completed graduate: 22 years.

nidades on the probability of experiencing psychological violence for those women that actually benefited from the program during that period of time (Angrist & Pischke, 2008; Glennerster & Takavarasha, 2013).

Nonetheless, the obtainment of that parameter is particularly controversial given the data at hand because as already mentioned, information on actual participation into the program at the household-level is only available for the year 2002. Furthermore, by making interested households responsible for starting the application process for the program themselves¹⁶, the expansion phase of Oportunidades introduced an important element of self-selection into participation that cannot be overlooked by this evaluation. In fact, take up rates during the first years after the change in the program's implementation process were considerably low, and numerous eligible households did actually not register for participation.

To overcome such downsides, this paper opts for an alternative strategy. First, the program's Average Intention-to-Treat Effect (AIT) is estimated by applying a *Conditional Difference-in-Differences Matching* methodology (Abadie, 2005; Heckman et al., 1998; Heckman, Ichimura, & Todd, 1997; Smith & Todd, 2005), which provides a first approximation of the potential magnitude of the ATT. Secondly, such a result is further specified by applying a *standard matching* methodology to the 2002 survey data, which allows to obtain a closer estimation of the program's ATT.

5.3.1. Oportunidades' Average Intention-to-Treat Effect (AIT)

Unlike the ATT, estimation of the AIT ignores the issue of actual household participation into Oportunidades and focuses on households' eligibility to participate into the program. Thus, households are considered eligible for participation if they reside in a locality that offers the possibility of joining Oportunidades, and the AIT measures the differences in the outcome of interest between eligible and non-eligible households.

Besides tackling problems related to the lack of data on actual household participation in the second survey round and the potential presence of an element of self-selection into the program between 2002 and 2005, focusing on obtaining AIT estimates brings about additional benefits to this particular study. First, AIT estimates represent the average effect of Oportunidades on the experience of intimate psychological abuse by all women that are offered the possibility of joining the program regardless of whether they ultimately participate, which has a highly significant interest from a policy point of view (Angelucci & Attanasio, 2006; Glennerster & Takavarasha, 2013). Second, and as long as Oportunidades could be proven to not have any spillover effects on non-treated households in participating localities, the AIT parameter would also consistently represent a lower bound to the ATT (Angelucci & Attanasio, 2006; Angrist & Pischke, 2008).

For the estimation of the AIT, this paper uses a two-steps *Conditional Difference-in-Differences Matching* methodology exclusively performed for those households that were not exposed to Oportunidades in 2002¹⁷.

¹⁶See Section IV.2.

¹⁷Those households that resided in localities in which the program had not been implemented yet.

The choice of this particular methodology is essentially motivated by the fact that the allocation of Oportunidades across Mexican localities over time has not been random. The program was indeed first implemented in rural localities that presented particularly large marginality indexes, and was progressively extended to less marginalized communities and semi-urban and urban areas. Consequently, this non-random, “phase-in” implementation process (Glennester & Takavarasha, 2013, p.128) implies that initially *treated* households are likely to systematically differ from *control* ones in a set of variables that may be simultaneously correlated with both the probability of being exposed to Oportunidades and the experience of intimate emotional abuse by the woman of the household.

Thus, to prevent the estimated impact of offering Oportunidades from being a function of certain community-level characteristics, the incorporation of a *difference-in differences* (DiD) estimation technique arises as a particularly suitable option. By focusing on the change in the variable of interest (rather than on its level) in treatment and control groups, DiD estimation allows to control for observed, and time-fixed, unobserved characteristics at the community level that can potentially affect treatment status and the outcome variable of interest at the same time (Angelucci & Attanasio, 2006).

However, this simple DiD methodology, as other traditional regression methods, uses parametric specifications to account for differences in observables between treatment and control units. In particular, it requires that, had the treatment not taken place, the average outcome of interest in the treatment group would have been the same than the one observed in the control group (Abadie, 2005)¹⁸. But, if pre-treatment characteristics significantly differ across treatment status and are associated to the outcome variable of interest, this identifying assumption would be unlikely to hold.

To properly account for this potential heterogeneity in treatment effects, this paper relies on a two-steps methodology in which matching techniques are incorporated to the DiD approach. First, treated and untreated households are matched in a series of *observable* characteristics that makes them comparable to each other¹⁹. After that, a DiD regression is performed for the matched pairs in order to obtain the AIT estimates.

In sum, the proposed conditional DiD matching methodology relaxes the traditional parallel trend assumption and becomes a nonparametric extension to the simple DiD approach in which treated and non-treated households with differing observed characteristics are allowed to experience different time trends in the outcome variable of interest. This methodology is particularly beneficial for the estimation of treatment effects in non-randomized experiments, since it combines the advantage of controlling for time-invariant non-observable features while it relaxes the linear assumption when controlling for observed characteristics (Abadie, 2005). The superiority of this method in comparison to other non-experimental matching estimators has been empirically proved (Heckman,

¹⁸ *Parallel trend* assumption.

¹⁹ See Appendix A.1.

Ichimura, & Todd, 1998; Smith & Todd, 2005).

My empirical analysis starts then by running a *probit* regression of the probability of a household to be exposed to Oportunidades between 2002 and 2005 on a series of socioeconomic independent variables measured in 2002 in the following form:

$$Prob(exposure = 1|X_i) = \Phi(\alpha + X_i'\beta)$$

where X_i' is a vector of locality and household-level variables that are significantly correlated not only with each household's eligibility to participate into Oportunidades, but with the way contraceptive decisions are made within the household as well.

Note here that X_i' incorporates independent regressors at both the community and the household levels. In theory, the probability of a household of residing in a treatment locality is a function of certain observable variables at the locality level, information that is summarized by each community's SBI. Thus, ideally, predicted probabilities of exposure to the program should exclusively be dependent on such an index of social backwardness. However, conditioning solely on each locality's SBI perfectly discriminates between treatment and control areas, which makes the *common support*²⁰ between treated and untreated households empty. This is the reason why certain household-level variables that can also affect each households' eligibility to participate into Oportunidades are incorporated into the probit regression, as proposed by Angelucci & Attanasio (2006).

Furthermore, it is important to highlight that every independent variable that enters the probit regression has been measured in 2002, that is, the baseline year. This assures the consistency of the matching procedure, since the variables on which matching is performed are measured before treatment took place, and therefore, were not affected by treatment status (Angrist & Pischke, 2008).

Once predicted probabilities of household eligibility have been obtained, they are used to match treated and untreated households and establish an area of common support. I then test that the *balancing property* holds in all blocks for all independent regressors. Finally, a DiD regression is run for those observations within the common support area in order to obtain the AIT estimates²¹.

5.3.2. Oportunidades' Average Treatment Effect on the Treated (ATT): an Approximation

Despite being interesting from a policy point of view, the estimation of the AIT is not generally the main objective when aiming to evaluate the potential effects of the implementation of a social program such as Oportunidades. The main parameter of interest is indeed the ATT, or the average effect of the program on the outcome variable for those individuals that become actual beneficiaries of the treatment.

²⁰According to Angelucci and Attanasio (2006), it is the region for which propensity scores present positive densities for both treatment and comparison units.

²¹See Appendix A.2 for further details on the matching logarithm and the DiD estimation procedure.

Given that data on actual participation in Oportunidades is only available for the first wave of the MxFLS, the estimation of the ATT can only be performed on the survey sample of 2002. Moreover, and due to the fact that participation into Oportunidades is not random, but depends on a series of locality and household-level characteristics, a *standard propensity score matching* methodology will be used for the estimation of this parameter²².

As in the previous section, and being the selection on observables the main identifying assumption of the matching methodology, I start by running a probit regression of the probability of a household of receiving Oportunidades in 2002 on a series of independent variables. Several differences with respect to the estimation process of the AIT should be noted here.

First of all, the dependent variable of the probit regression is now a dichotomous variable that takes value 1 if the household participates into Oportunidades in 2002, and zero otherwise. Thus, for the estimation of the ATT, it is actual participation into the program (and no mere eligibility) that determines a household's treatment status. In the second place, baseline pre-program information on households' socioeconomic characteristics of interest is not available in this case. Both treatment status and independent covariates are measured at the same point in time, which could bring about important risks for the consistency of the matching process (Behrman et al., 2008; Heckman, Ichimura, & Todd, 1997). Thus, only 2002 variables that are not likely to have been altered by participation into Oportunidades enter the probit regression this time²³.

Once predicted probabilities of actual participation in the program have been obtained, I use them to match treated and untreated households and establish an area of common support. I then test that the balancing property holds in all blocks for all independent regressors, and obtain the ATT estimates.

6. Empirical Results

6.1. Average Intention-to-Treat Effect (AIT)

Panel A of Table 2 presents summary statistics on all conditioning variables that will be used to estimate the probability of each household in the sample of being eligible to participate in Oportunidades between 2002 and 2005. Statistics are provided for both treatment and control groups, and the statistical significance of existing differences between both groups is indicated when appropriate.

Obtained results demonstrate that at the baseline year, and before any matching procedure is performed, households that are to be exposed to Oportunidades during the period of interest clearly present a lower socioeconomic status than those that belong to communities in which the program will not be implemented. First, eligible households belong to communities with larger indexes of backwardness. Moreover, they are larger in

²²See Appendix A.2 for further details on the matching logarithm.

²³See Table 1 for identification of these variables.

Table 2: Summary Statistics of Propensity Score Conditioning Variables; AIT Estimation

	A. Pre-Matching			B. Post-Matching		
	<i>Treated</i>	<i>Control</i>	<i>Difference</i>	<i>Treated</i>	<i>Control</i>	<i>Difference</i>
log_members	1.454	1.401	0.053**	1.449	1.457	0.008
dependency	0.799	0.725	0.074**	0.788	0.796	0.009
schooling	8.048	7.978	0.070	8.078	8.065	-0.013
remittances	0.090	0.043	0.047**	0.070	0.088	0.018
property	0.779	0.759	0.021	0.776	0.780	0.004
rooms	2.150	2.093	0.057	2.165	2.164	-0.002
telephone	0.475	0.506	-0.031	0.476	0.482	0.006
electric	0.948	0.975	-0.027**	0.959	0.955	-0.004
electronic	0.968	0.975	-0.007	0.969	0.971	0.002
floor	0.452	0.469	-0.017	0.440	0.454	0.014
water	0.835	0.843	-0.007	0.852	0.840	-0.012
car	0.485	0.442	0.043*	0.494	0.494	0
fuel	1.000	1.000	(dropped)	1.000	1.000	(dropped)
rural	2.283	2.408	-0.125*	2.295	2.266	-0.028
SBI	-1.127	-1.217	0.091**	-1.143	-1.138	-0.005
N	1333	395		1333	395	

**p<0.01; *p<0.05; +p<0.10

The study sample is restricted to 1,728 households. These households: i) are conformed by couples that have at least one child, ii) provided information when asked about the decision-making process on the use of contraceptive methods, iii) were interviewed both in 2002 and 2005, iv) were not exposed to Oportunidades by 2002, and v) their estimated propensity score lies within the common support area.

Treated group is composed by those households that reside in communities in which Oportunidades is implemented at some point between 2002 and 2005. *Control* group is composed by those households that reside in communities in which Oportunidades is yet not implemented by 2005.

A Kernel algorithm has been used to obtain the results in panel B.

All sample means are weighted by the inverse of sampling weights.

terms of number of family members, present higher dependency ratios, tend to receive more financial help from family and friends living abroad, and are less likely to own electric appliances. Finally, and given the urban-focus that has been characterizing the expansion process of Oportunidades since 2002, the proportion of urban households that conform the treatment group is significantly larger in comparison to the control one. This phenomenon can probably explain why treated households appear to be more likely to have their own car.

The existence of meaningful differences in various determinants of the probability of being eligible to participate into Oportunidades justifies why it would not be appropriate to use the outcome of interest of non-exposed households as counterfactual when aiming to estimate the AIT of the program. Independent covariates are potentially correlated with the dependent indicator *power*, and thus, significant differences in the values of those regressors make impossible to compare the potential outcomes of violence *as untreated* of exposed and non-exposed groups. This phenomenon generates the need of matching treated and untreated households before aiming to estimate the AIT of Oportunidades on the outcome variable of interest.

Consequently, I first enter the aforementioned variables into a probit model and use the estimated coefficients

to predict the propensity scores of eligibility of all households in both the treatment and comparison groups. Panels A and B of Figure 3 illustrate the density distribution of the predicted probabilities by treatment status, concluding the existence of a common support area between $[0.67, 0.99]$ ²⁴.

Predicted probabilities are then used to match treated and untreated households within the common support by applying a *Kernel* algorithm. Once the matching procedure has finalized, the fulfillment of the balancing property is verified²⁵, and panel B of Table 2 presents the results. As it can be seen, previous differences in the means of those observable variables on which matching has been performed are not statistically significant at 5% level anymore, and it is possible to conclude that the values of those independent regressors on which matched pairs have been constructed are statistically the same across treated and non-treated households. This process generates a consistent counterfactual group, which will facilitate the interpretation of AIT estimates as the average impact of being exposed to Oportunidades on the prevalence of psychological abusive behaviors among Mexican couples.

Finally, a *Conditional Difference-in-Differences Matching* estimation²⁶ is performed, and estimates of the AIT are presented in Table 3. In particular, the dependent indicator *power* has been constructed based on the survey responses given by women in Panel A, and by men in Panel B.

Results on Panel A demonstrate that in 2002, the fraction of households in which women have some kind of participation in making the decision on the use of contraceptives is slightly larger for the treatment (70.5%) than for the control group (68.3%). Nevertheless, this difference is not statistically significant at 5%. In 2005, however, women's participation rates in the decision process decrease in both treatment and control groups. In the first case, only 64.1% of women report having participating in the decision on the use of contraceptives, while this percentage decreases up to 51.6% for the latter group of households. From this result, it can be stated that in general terms, Mexican women experience larger levels of psychological violence from their intimate partners in 2005 than in 2002.

Such a generalized increase in the prevalence of emotional abuse could find different theoretical explanations and should be subject to further research, but that is not the main concern of this study. What is important to notice here, however, is that the increase in psychological violence rates over time is not identical for both types of households. The obtained difference-in-difference estimate in the last column of Table 2 demonstrates that being exposed to the program Oportunidades has an statistically significant effect on the outcome variable of interest. The probability of actively participating in the decision on the use of contraceptives is 10.4 percentage points larger for women in households that are exposed to Oportunidades between 2002 and 2005, in comparison to those in households that belong to communities in which the program is not implemented. Thus, AIT estimates demonstrate that being exposed to Oportunidades significantly reduces the prevalence of psychological violence

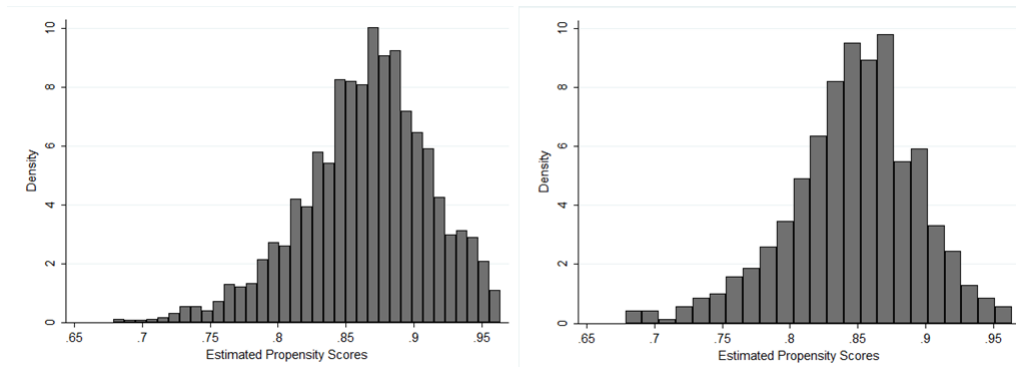
²⁴Stata's *pscore* command confirms this result.

²⁵Stata's *psmatch2* and *ptest* commands have been used for this purpose.

²⁶Stata's *diff* command is used for this purpose.

Figure 3: Validation of Common Support; AIT Estimation

A. Separate Propensity Score Histograms for Treatment and Control Groups



B. Propensity Score Histogram by Treatment Status

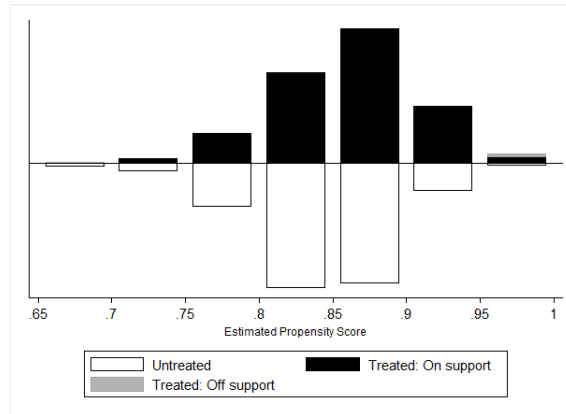


Table 3: AIT Estimation: Conditional Difference-in-Differences Matching Methodology

		<i>2002</i>			<i>2005</i>			DiD
		Control	Treated	Difference	Control	Treated	Difference	
A. Female respondents	<i>power</i>	0.683	0.705	0.022	0.516	0.641	0.126*	0.104+
	<i>se</i>	(0.015)	(0.015)	(0.021)	(0.056)	(0.015)	(0.058)	(0.062)
B. Male respondents	<i>power</i>	0.682	0.685	0.003	0.546	0.653	0.107+	0.104+
	<i>se</i>	(0.015)	(0.015)	(0.021)	(0.056)	(0.015)	(0.058)	(0.062)
N		395	1333		395	1333		

**p<0.01; *p<0.05; +p<0.10

A Conditional Difference-in-Differences Matching methodology has been used to obtain the results in the last column.

among Mexican couples. This result is statistically significant at 10% level.

Almost identical results are found in Panel B of Table 3, which suggests than both Mexican men and women

have very similar perceptions about which members of the household have a say regarding the decision-making process on the use of contraceptive measures.

6.1.1. Robustness Check

I extend the matching analysis by restricting possible matches to other households that share the same rural-urban classification. In this way, rural households living in communities with less than 2,500 people are exclusively matched to other households also living in this type of municipality. The same procedure is applied for the other three categories of such a classification²⁷. This approach allows to further control for those potential unaccounted, unobserved differences between urban and rural households that are likely to influence the prevalence of psychological violence within the couple. AIT estimates are presented in Table 4²⁸.

Results in the last column of Table 4 show that, after restricting possible matches to other households with the same rural-urban classification, the statistical significance of Oportunidades' AIT estimates vanishes, suggesting that previously obtained results on the program's impact on intimate partner violence had been overestimated.

This overestimation is most likely due to the fact that the matching procedure did not completely account for the differences associated to the rural-urban character of treatment and untreated households. Considering that the rural character of a household negatively affects both the probability of being eligible to participate into Oportunidades between 2002 and 2005²⁹ and the participation share of women on intra-household decisions on contraceptive use³⁰, the existence of unaccounted differences in such an independent covariate are likely to have led to the obtainment of upward biased estimates of Oportunidades' AIT effects on the outcome variable of interest. Results in Table 5 confirm these predictions.

On the one hand, Panel A of Table 5 corroborates the previously elucidated existence of a positive, significant relationship between exposure to Oportunidades and women's participation in the decision-making over contraceptive use for the case of urban households. Restricted to the urban context, women in households exposed to Oportunidades between 2002 and 2005 present a probability of actively participating in the decision on the use of contraceptives that is 13.5 percentage points larger than that of women in non-eligible households ($p < 0.10$). Furthermore, when it is men's responses the ones taken into account for the construction of the dependent variable, the magnitude of the estimated impact increases up to 16 percentage points and becomes significant at 5% level. Ultimately, it is possible to affirm that in the urban context, being exposed to Oportunidades significantly reduces the prevalence of psychological violence among Mexican couples.

On the other hand, highly different results are found for the case of rural households. First, no significant association between eligibility into the program and intimate partner violence is found when it is women who

²⁷See Table 1 for further details on the rural-urban classification.

²⁸Results on the validation of the common support and balancing properties are available upon request.

²⁹As it has been explained, the expansion process of Oportunidades that took place since 2002 was particularly focused on reaching urban and semi-urban areas.

³⁰Conservative beliefs regarding established gender roles within the couple tend to prevail in rural localities.

Table 4: AIT Estimation: Robustness Check

		<i>2002</i>			<i>2005</i>			DiD
		Control	Treated	Difference	Control	Treated	Difference	
A. Female respondents	<i>power</i> <i>se</i>	0.656 (0.016)	0.662 (0.009)	0.006 (0.018)	0.567 (0.035)	0.6 (0.009)	0.033 (0.036)	0.028 (0.040)
B. Male respondents	<i>power</i> <i>se</i>	0.650 (0.016)	0.651 (0.009)	0.001 (0.018)	0.588 (0.035)	0.609 (0.009)	0.021 (0.036)	0.020 (0.040)
N		413	2974		413	1504		

**p<0.01; *p<0.05; +p<0.10

A Conditional Difference-in-Differences Matching methodology has been used to obtain the results in the last column.

Table 5: AIT Estimation: Heterogeneous Effects

A. Urban Households

		<i>2002</i>			<i>2005</i>			DiD
		Control	Treated	Difference	Control	Treated	Difference	
A.1. Female respondents	<i>power</i> <i>se</i>	0.680 (0.020)	0.695 (0.020)	0.015 (0.029)	0.501 (0.061)	0.652 (0.021)	0.150* (0.065)	0.135+ (0.071)
A.2. Male respondents	<i>power</i> <i>se</i>	0.688 (0.02)	0.698 (0.020)	0.009 (0.028)	0.510 (0.061)	0.680 (0.02)	0.170** (0.064)	0.160* (0.070)
N		221	780		221	780		

B. Rural Households

		<i>2002</i>			<i>2005</i>			DiD
		Control	Treated	Difference	Control	Treated	Difference	
A. Female respondents	<i>power</i> <i>se</i>	0.690 (0.019)	0.704 (0.019)	0.014 (0.027)	0.738 (0.168)	0.622 (0.019)	-0.116 (0.169)	-0.130 (0.171)
B. Male respondents	<i>power</i> <i>se</i>	0.703 (0.019)	0.664 (0.019)	-0.039 (0.027)	0.772 (0.169)	0.622 (0.019)	-0.378* (0.170)	-0.150* (0.172)
N		192	724		192	724		

**p<0.01; *p<0.05; +p<0.10

A Conditional Difference-in-Differences Matching methodology has been used to obtain the results in the last column. Following the classification in Table 1, urban households are those residing in localities that take values 1 (population of more than 100,000) and 2 (population between 15,000 and 100,000) for the categorical variable *rural*. Accordingly, rural households are those residing in communities that take values 3 (population between 2,500 and 15,000) and 4 (population less than 2,500) for such a variable.

inform about their own participation in making decisions on the use of contraceptive methods. Moreover, when men's responses are considered, exposure to Oportunidades appears to be negatively correlated with women's decision power on contraceptive use. Indeed, women in rural households exposed to Oportunidades between 2002 and 2005 appear to have a probability of participation in the decision on the use of contraceptives that is 15 percentage points lower than that of rural women in non-eligible households ($p < 0.05$).

The differing results obtained from women's and men's responses seem to indicate that women in rural households can be suspected of under-reporting any changes occurred in their participation power on decisions about the use of contraceptives. This could be explained by the fact that, in the rural setting, cultural beliefs on established gender roles within the couple tend to be more rooted than in urban areas. This could generate feelings of shame or fear of retaliation among rural women, which could explain why no significant program impact is found when using female responses in the construction of the dependent variable. Moreover, when using men's responses, AIT estimates for Mexican rural households seem to be more compatible with extractive theories on domestic violence, in which the increased power position attained by women through their eligibility to participate into Oportunidades supposes a threat for their intimate partners, which translates into a larger prevalence of violent behaviors within the household.

These divergent results demonstrate the existence of certain underlying characteristics typical of the Mexican rural setting that make it unique, and confirm the importance of strictly controlling for this covariate when assessing the impact of Oportunidades on intimate partner violence outcomes.

6.2. Average Treatment Effect on the Treated (ATT)

As in the previous section, Panel A of Table 6 presents summary statistics of those independent variables that will be used to estimate the probability of each household in the sample to actually participate in the program Oportunidades in 2002. Results demonstrate that before matching, beneficiary households tend to be situated in communities where backwardness indexes are larger. They are also characterized by lower levels of schooling attainment achieved by household heads and spouses, lower number of rooms per dwelling, and the prevalence of outside water sources for washing and bathing. In this case, the proportion of urban households within the treatment group is significantly lower than that of the control group, which can probably explain why treated households appear to be more likely to own their living arrangements rather than to rent them.

Again, the existence of statistically significant differences in the determinants of the probability of participation in Oportunidades justifies the need of performing a matching procedure previous to any estimation of the ATT. As before, I first predict the propensity scores of participating in the program of all households in the sample by using a probit model. Panels A and B of Figure 4 illustrate the density distribution of the predicted probabilities by treatment status, and confirm the existence of a common support area between $[0.05, 0.6]$.

Table 6: Summary Statistics on Propensity Score Conditioning Variables; ATT Estimation

	A. Pre-Matching			B. Post-Matching		
	<i>Treat</i>	<i>Cont</i>	<i>Diff</i>	<i>Treat</i>	<i>Cont</i>	<i>Diff</i>
schooling	4.989	7.513	-2.524**	5.714	5.905	-0.191
property	0.849	0.763	0.086**	0.816	0.823	-0.007
rooms	1.892	2.101	-0.209**	1.959	1.950	0.009
water	0.535	0.879	-0.344**	0.536	0.493	0.043
rural	3.820	2.312	1.508**	3.685	3.619	0.066
marginality	-0.208	-1.201	0.994**	-0.434	-0.464	0.030
N	267	2,439		267	2,439	

**p<0.01; *p<0.05; +p<0.10

The study sample is restricted to 2,706 households. These households: i) are conformed by couples that have at least one children, ii) provided information when asked about the decision-making process on the use of contraceptive methods, and iii) their estimated propensity score lies within the common support area.

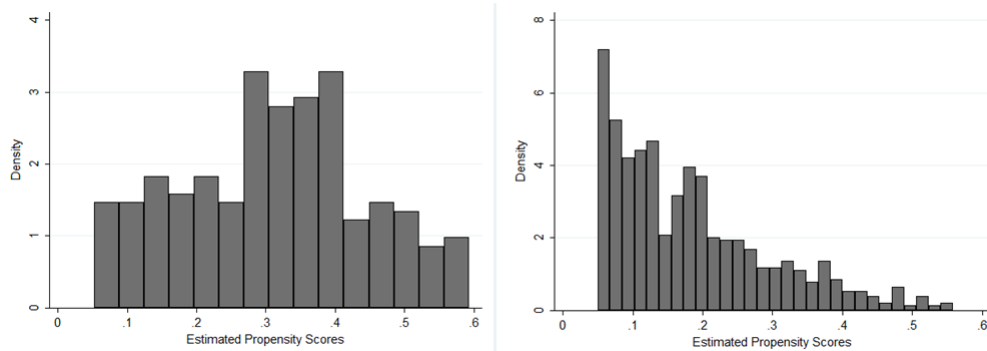
Treated group is composed by those households that are actual beneficiaries of Oportunidades by 2002. *Control* group is composed by those households that do not participate into the program by 2002.

A Kernel algorithm has been used to obtain the results in panel B.

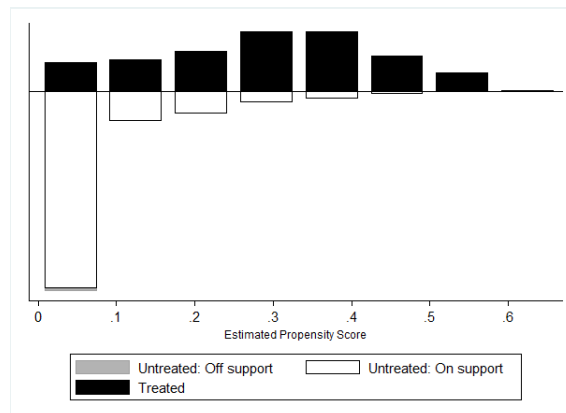
All sample means are weighted by the inverse of sampling weights.

Figure 4: Validation of Common Support; ATT Estimation

A. Separate Propensity Score Histograms for Treatment and Control Groups



B. Propensity Score Histogram by Treatment Status



For comparison purposes with the AIT estimation, predicted probabilities are used to match treated and untreated households within the common support area by applying a Kernel algorithm, and the balancing property is later verified. Panel B of Table 6 introduces the results. Previously existing differences in the means of those observable variables on which matching has been performed are not statistically significant at 5% level anymore. Observable characteristics on which matched pairs have been constructed are then balanced across treated and non-treated households, which will allow to interpret ATT estimates as the average impact of participating into Oportunidades on the prevalence of psychological violence among those Mexican couples that were beneficiaries of the program by 2002.

Estimates of the ATT are presented in Table 7. Given the extreme importance of meticulously controlling for the rural-urban character of the study households demonstrated in the previous section, results on the first column of Table 7 have already been obtained by restricting possible matches to other households that share the same rural-urban classification.

ATT estimates show that participation into the program Oportunidades has a statistically significant effect on the prevalence of intimate partner violence among beneficiary couples. In fact, the probability of actively participating in the decision on the use of contraceptives is 13.2 percentage points larger for beneficiary mothers than for non-participants ($p < 0.05$), a result that increases up to 13.8 percentage points when men's responses are the ones evaluated. In conclusion, estimation of the ATT corroborates previous AIT effect predictions: participation into Oportunidades significantly reduces the prevalence of psychological violence among Mexican couples, and this result is statistically significant at 5% level.

The last two columns in Table 7 present considerably similar results to the ones obtained in Table 5 as well. First, while the positive relationship between participation into Oportunidades and intimate psychological violence remains significant for the case of urban households, such an effect vanishes when analyzing the rural setting. Moreover, the estimated impact of the program is in any case larger when men's survey responses are used for the construction of the dependent variable, instead of those of women.

6.3. Limitations

The main goal of this investigation was to throw some light on the potentially existent relationship between participation into the Mexican program Oportunidades and the prevalence of intimate partner violence among Mexican couples. No association was found for the case of rural households, but findings are encouraging within the urban setting. However, this study suffers from significant methodological caveats that cannot be overlooked, and that should be carefully considered in further research on the topic.

On the one hand, this study builds on household and community-level data from the first and second waves of the MxFLS. Despite counting with certain features that make it appropriate for the proposed analysis, the

Table 7: ATT Estimation: Kernel Propensity Score Methodology

		All	Urban	Rural
A. Female respondents	<i>po</i> ^u <i>ver</i> se	0.132* (0.065)	0.083* (0.039)	0.076 (0.111)
B. Male respondents	<i>po</i> ^u <i>ver</i> se	0.138* (0.047)	0.092** (0.040)	0.118 (0.114)
N		2,706	1,610	1,096

**p<0.01; *p<0.05; +p<0.10

A Kernel Propensity Score methodology has been used to obtain the results in all three columns.

Following the classification in Table 1, urban households are those residing in localities that take values 1 (population of more than 100,000) and 2 (population between 15,000 and 100,000) for the categorical variable *rural*. Accordingly, rural households are those residing in communities that take values 3 (population between 2,500 and 15,000) and 4 (population less than 2,500) for such a variable.

second wave of this survey does not provide information about participation into Oportunidades at the household-level. Such a drawback makes it impossible to apply a difference-in-difference methodology in order to obtain the program's ATT, which would provide highly consistent estimates of the effect of Oportunidades on the outcome of interest for the beneficiaries of the program.

To overcome such a drawback, this paper opted for an alternative strategy. First, the program's AIT was estimated, which provided a first approximation of the potential magnitude of the ATT. Such a result was further specified by applying a standard matching methodology to the 2002 survey data, which allowed to obtain a closer estimation of the program's ATT. Given the lack of baseline information, the matching procedure was exclusively performed on carefully selected variables that are considered to not be likely to be altered by participation into the program. Nonetheless, I am aware of the potential biases that can be generated by this estimation methodology, and I therefore encourage to combine the matching procedure with a difference-in-difference approach as soon as information regarding households' participation status for the year 2005 is made publicly available.

On the other hand, robustness analyses demonstrated the presence of a significant rural-urban heterogeneity regarding the impact of Oportunidades on the prevalence of intimate partner violence. Prospective research on the topic should be aware of this issue, and contemplate the possibility of restricting the analysis to either the urban or the rural settings.

Finally, all empirical analyses in this paper use a considerably specific measure of intimate psychological abuse that aims to reduce the chances of obtaining downward biased estimates of the impact of the program. Despite the obvious benefits of such a choice, it is important to remember that this indicator is still a self-reported measure of the incidence of violence, and as such, it is not completely free of reporting biases.

7. Conclusions

Although large is the literature that demonstrates the numerous positive effects that the program Oportunidades has had on the lives of Mexican families over the years, especially in the fields of children's education, health, and nutrition, much more scarce are the studies that focus on evaluating the potential impact of the program on the prevalence of intimate partner violence. Accordingly, this paper aims to contribute to the debate by specifically investigating whether or not, participation into Oportunidades is likely to significantly alter the prevalence of psychological violence among those couples that benefit from the program.

Two are the main contributions of this study to current research on the topic. First, it proposes the use of a novel indicator of intimate psychological violence that has not been used before: the extent to which a woman actively participates in making decisions relative to the use of contraceptive methods. This indicator is likely to be less vulnerable to reporting biases than other self-reported measures of intimate partner abuse commonly used by the literature, which considerably reduces the chances of obtaining downward biased estimates of the program's impact on the prevalence of this type of violence. Secondly, this study is first in taking advantage of the panel structure of the Mexican Family Life Survey to respond to the research question of interest. Indeed, the main empirical analysis combines a difference-in-differences approach with traditional propensity score matching techniques, which provides an element of additional consistency to the obtained impact estimates that has not been achievable before.

My empirical investigation began by summarizing the main trends in the current debate on the relationship between participation into gender-oriented conditional cash transfer programs and the prevalence of intimate partner violence. This theoretical discussion reflected that, although current economic research seems to agree that these types of programs tend to improve women's status within the power structure of their households, no final conclusions have been reached on how this improved position relates to the exhibition of violent behaviors from their couples.

The estimation of Oportunidades' Average-Intention-to-Treat effect brings these theoretical predictions to the particular data, and provides empirical evidence in favor of traditional theories of the family. Results show that the decision-making power on the use of contraceptives of women residing in households that are eligible to participate into the program is significantly larger than that of women in non-eligible households. Once these results are disaggregated so as to account for the potential impact heterogeneity related to the rural-urban character of the households in the sample, such a positive relationship appears to only concern couples residing in urban areas. On the contrary, eligibility into Oportunidades in rural areas does not significantly increase, but could even reduce, women's decision power on the matter.

Estimates of the program's Average Treatment Effect on the Treated appear to confirm these initial results. Women in urban households that actually participate into the program have a lower probability of suffering from

psychological abuses from their couples, while no significant association between the two phenomena is found in the case of beneficiary women in the rural setting.

Although I am aware that the methodology used for my empirical analyses is not completely exempt of incorporating estimation biases, the findings of this study can be interpreted as indicative that Oportunidades has a significant impact in reducing the level of psychological abuse suffered by Mexican women living in urban areas by hands of their intimate partners.

Ultimately, this study contributes to the economic literature by providing quantitative evidence of the impact of a specific gender-oriented CCT program on a highly particular outcome of intimate partner violence such as it is emotional abuse. Despite the impossibility of determining to what extent these findings are specific to the Mexican context as opposed to other gender-oriented CCTs, these results should encourage policy makers in urban areas to further investigate the topic. Gender-oriented CCTs can have significant effects in the prevalence of emotional abuse among couples, and they should be considered as potential complements to the issuance of legal instruments in the fight against psychological intimate partner violence in the upcoming years.

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Appendix

A.1. Potential Outcomes Framework and Matching Methodology

AIT estimates aim to inform about the impact of Oportunidades on emotional abuse prevalence among Mexican couples that are eligible to participate into the program. To depict the estimation of such an effect in an analytical manner, the potential outcomes framework appears to be an extremely helpful tool.

Taking the following notation as standpoint:

$exposure_{it}$ is a dummy variable that takes value one if the locality of residence of household i at time t has been treated with the implementation of Oportunidades, and zero otherwise;

$i = 1 \dots N$;

t can either be 2002 or 2005. At $t = 2002$, no locality in the sample had been exposed to the implementation of Oportunidades yet.

Potential outcomes of interest are denoted on the basis of program eligibility in the following manner:

$power1_{it}$ denotes potential outcomes of emotional abuse of household i *as eligible* to participate into Oportunidades, regardless of whether or not the household is actually eligible to participate.

$power0_{it}$ denotes potential violence outcomes of household i *as non-eligible* to participate into Oportunidades, regardless of whether or not the household is actually eligible to participate.

Accordingly:

$$AIT = E[\Delta it] = E[power1_{it}|exposure_{it} = 1] - E[power0_{it}|exposure_{it} = 1].$$

Obviously, the problem arises due to the impossibility of observing the second term of the last expression. Once a household is eligible to participate into Oportunidades, it is technically impossible to observe what the outcome variable would have been, had the household not been exposed to the program.

Thus, matching methodologies rely on what is known as *selection on observables* or *Conditional Independence Assumption* (CIA) in order to use observed outcomes of non-exposed households as an estimation of the unobserved counterfactual of interest. The CIA assures that, conditional on a set of observable variables, households' exposure to the program across treatment and control localities is as good as random, and potential outcomes therefore, independent of treatment status (Angelucci & Attanasio, 2006; Angrist & Pischke; 2008).

Analytically:

$$power1_{it}, power0_{it} \perp exposure_{it} | X_i$$

Thus, $E(power0_{it}|X_i; exposure_{it} = 1) = E(power0_{it}|X_i; exposure_{it} = 0)$ and consequently:

$$AIT = E[\Delta it] = E[power1_{it}|exposure_{it} = 1] - E[power0_{it}|exposure_{it} = 0].$$

This solves the missing counterfactual problem and allows to compute the AIT by comparing observed outcomes of exposed and non-exposed households.

A.2. Propensity Score Matching

As it has been shown, the essence of any matching methodology is the creation of a control group as similar as possible to the treated one (in terms of a particular set of observed characteristics), with the ultimate goal of reducing potential biases in the estimation of the treatment effects of a particular program.

Although there exist a wide range of matching procedures, this paper builds on Rosenbaum and Rubin's propensity score matching methodology (1983). The essence of such a method lies on the fact that matching individuals (or households, in this case) on an n -dimensional vector of observable features is generally unfeasible for large n ³¹. Accordingly, what this methodology proposes instead is to summarize each unit's baseline characteristics of interest into a unique variable (the propensity score), making the matching procedure much more feasible.

Thus, the propensity score arises as the probability of receiving a particular treatment, given certain values of baseline characteristics: $p(X) = Pr(exposure_{it} = 1|X)$. Using this definition as standpoint, the potential outcomes framework presented in Appendix A.1. can be now expressed in the following manner:

$$power1_{it}, power0_{it} \perp exposure_{it} | p(X_i)$$

Thus, $E(power0_{it} | p(X_i); exposure_{it} = 1) = E(power0_{it} | p(X_i); exposure_{it} = 0)$ and consequently:

$$AIT = E[\Delta it] = E[power1_{it} | exposure_{it} = 1] - E[power0_{it} | exposure_{it} = 0].$$

Once propensity scores of treated and untreated households have been obtained, different algorithms can be used in order to perform the matching. In particular, this paper has opted for using a Kernel algorithm, which uses weighted averages of all households in the control group and inside the common support region to construct the counterfactual outcome in the following manner:

$$w_{i,j} = \frac{K(X_i - X_j)}{\sum_{k=1}^{N_0} K(X_i - X_k)}$$

where i refers to a household in the treatment group; j indicates belonging to the control group; N_0 is the number of households in the control group; and K is a Kernel function.

Two are the major advantages of using a Kernel algorithm as matching procedure. First, by using information from a wide range of households within the control group, a lower estimation variance can be obtained, which facilitates the obtainment of statistically significant treatment effects. Furthermore, this algorithm is especially suitable for the additional implementation of a difference-in-differences approach, as it has been suggested by the economic literature. Indeed, when both methodologies are simultaneously applied for the estimation of treatment effects³² this matching algorithm facilitates the obtainment of considerably consistent impact estimates in the following manner:

$$Effect_{matching, DiD} = \frac{1}{N_1} \sum_{i=1}^{N_1} [(power1_{i,2005} - power0_{i,2002}) - \sum_{j=1}^{N_0} w_{i,j} (power0_{j,2005} - power0_{j,2002})]$$

³¹ *Curse of dimensionality.*

³² As in Section 5.3.1.