The Impact of Intimate Partner Violence on Women's Labour Market Outcomes

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Abstract

This paper investigates the impact of intimate partner violence on the participation of women in the labour market and their access to employment in the form of being a wage worker, self-employed or unpaid family worker. To address the possibility of endogeneity, especially due to simultaneity, between intimate partner violence and female labour force participation, we use the history of violence, both of the woman and her partner, as instrumental variables. Our results provide evidence that intimate partner violence is associated with an increased probability of a woman participating in the labour market. Further analysis shows that the rent extraction mechanism is the most likely explanation for the positive relationship.

Keywords: Intimate partner violence; female labour force participation; instrumental variables; Turkey
JEL codes: J12, J16, J21, O15

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Highlights

- There is a long-standing interest in the relationship between women's employment and intimate partner violence (IPV).
- Studies have generally investigated the effect of women's employment on IPV.
- This paper focuses on the reverse link and looks at the impact of IPV on women's labour market outcomes in Turkey.
- Our findings point that being subject to IPV is associated with an increased probability of a woman participating in the labour market.
- Amongst the potential underlying mechanisms, we provide suggestive evidence that the positive link is most likely driven by rent extraction.

1. Introduction

Violence against women is a significant public health issue, with the most pervasive form of violence being perpetrated against women by their intimate partners and taking place at home; an estimated 26% of ever-married/partnered women aged 15 years and older across the world have been subjected to physical and/or sexual intimate partner violence at least once in their lifetime (WHO, 2021).[1] Numerous studies investigate different social and economic factors associated with violence and the high social and economic costs of it for women and society. This paper investigates one particular consequence of intimate partner violence (IPV), women's ability to contribute to the economy and be economically independent, which we capture by their labour force participation (LFP).

There is a long-standing interest in analysing the relationship between violence against women and their employment outcomes. Existing studies are mainly concerned with exploring the causal effect of economic empowerment of women, which includes income generation, income control, and participation in the labour and credit markets, on the incidence of IPV. This line of research presents mixed effects. Building on household bargaining theories, some note that women's economic empowerment through their access to employment or relative increases in their earnings reduces violence against them by increasing their bargaining power in the households or providing a possibility of leaving an abusive relationship (Farmer and Tiefenthaler 1996, 1997; Tauchen et al. 1991). For example, using data for the US, Aizer (2010) shows that a reduced gender wage gap decreases the incidence of domestic violence against women. Bhattacharya et al. (2011) point to a protective effect of improvements in the financial status of women on violence against them, using data for North India. In contrast, many studies note a negative link, mainly drawing on male backlash theory that suggests that men may view female employment as a threat to male dominance and hence retaliate violently to establish their dominance. In line with this argument, Cools and Kotsadam

[1] An extreme form of this violence is homicide, about 38% of murders of women are by their intimate partners (Stöckl et al., 2013; WHO, 2013).

(2017) find that female employment is associated with a greater risk of being exposed to spousal violence in Sub-Saharan Africa, and this is more pronounced in areas where wife-beating is normalised. Using data for India, Eswaran and Malhotra (2011) indicate that women's work outside the home is associated with a higher incidence of spousal violence; especially when husbands' reservation utilities are low, and violence is their main tool to increase their bargaining power over their wives. Similarly, based on data for Spain, Alonso-Berrego and Carrasco (2017) show that the highest risk of violence is observed amongst couples in which women work but their partners do not work, signalling that men resort to violence when their dominant position is challenged.

One common issue acknowledged in all these studies investigating the impact of women's empowerment, including their labour force participation, on the incidence of violence against them is the possibility of endogeneity; particularly, due to simultaneity (Anderberg et al., 2021).[2] Whilst women's employment could affect violence against them, it is equally possible that violence could affect women's employment prospects, financial position and, eventually, their economic and social wellbeing. Nevertheless, although there is a consensus that there is a potential causal relationship from IPV to women's employment and significant economic costs associated with IPV (Peterson et al., 2018; Walby, 2004)[3], empirical research directly testing this link is relatively recent and scarce.

Early evidence exploring the effect of IPV on women's employment outcomes fails to provide a statistically significant association potentially due to the data limitations and not being able to tackle the problem of endogeneity (see, for example, Lindhorst et al., 2007; Lloyd, 1997; Lloyd & Taluc,

[2] Studies investigating the effect of employment or relative financial position of women on their exposure to domestic violence have adopted several strategies to overcome the problem of endogeneity. These included using the instrumental variable approach (Chin, 2012; Eswaran and Malhotra, 2011; Lenze and Klasen, 2017), employing exogenous measures for women's financial situation (Aizer, 2010), exogenous geographical measures of employment/unemployment rates by gender and age (Alonso-Berrego and Carrasco, 2017) or exogenous labour market shocks (Erten and Keskin, 2021).

[3] Peterson et al. (2018) estimate the economic burden of IPV at $3.6 trillion (in 2015 US$) for the US, with 60% of this being medical costs and 37% of the costs being lost productivity (defined as lost days of work or school) both among the victims and perpetrators. For England and Wales, Walby (2004) estimates the economic costs of domestic violence at around £2.7 billion using 2001 data. This is the cost of time off work due to injuries; further, they estimate that around half of the costs of such sickness absences are borne by the employer and half by the individual in lost wages.

1999; Tolman & Rosen, 2001).[4] Two recent studies investigating the impact of IPV on female LFP, while addressing the issue of simultaneity, are Bhattacharya (2015) and Fajardo-Gonzalez (2021). Using data for India, Bhattacharya (2015) investigates the effect of IPV on women's employment status using an instrumental variable approach. The instrument used in their study is the husband's family history of violence inferred from a question about whether his father ever beat his mother. Their results show that spousal violence is associated with a greater probability of women being employed. Fajardo-Gonzalez (2021) presents that IPV is associated with a woman's increased probability of being employed in Colombia, employing husband's experience of violence in his childhood as an instrument for the incidence of domestic violence.

In this paper, our aim is to contribute to this less rigorously explored link from IPV to the labour force participation of women, using rich and nationally representative data for Turkey. As with the most recent work, to address the issue of simultaneity, we use the instrumental variable approach. The instruments we use represent the exposure to violence for both the woman and her husband. Witnessing her mother's experience of IPV captures a woman's exposure to the violent environment in childhood. For the husband, we use his family history of violence, which is a recognised cue to trigger male violence. To further minimize the possibility of a selection effect, we use an extensive set of controls covering both women's and their husbands' characteristics and the wider social/institutional elements. We broaden the previous work by looking into both the types of work

[4] These studies are mainly for the US, and the samples analysed are often restricted to low-income neighbourhoods or women on welfare. Nevertheless, despite no significant evidence of the impact of IPV on women's employment, IPV is shown to be associated with several other unfavourable labour market outcomes such as more frequent spells of unemployment in the past (Lloyd and Taluc, 1999), or a decrease in the number of hours worked (Tolman and Wang, 2005). Farmer and Tiefenthaler (2004), again using data from the US, look at both the participation of women in work and their earnings when in work; their findings suggest that while IPV reduces women's productivity (and hence earnings), it has little effect on their participation in work. Across these studies, one explanation put forward for unfavourable outcomes for women, once in work, is time off work and loss of wages due to injuries and sickness absences. In our dataset, we do not have information on the previous history of employment and the hours worked by women; so we do not address these issues, and instead focus on the impact of IPV on the extensive margin of labour supply, i.e. whether women work or not.

that women do in the labour force, wage workers, self-employed, or unpaid family workers[5]; and, the different types of violence women are subject to, physical, psychological and sexual. Differentiating between different forms of employment and types of violent behaviour, along with acknowledging various factors that may contribute to both female LFP and IPV, allows us to explore several mechanisms that could potentially explain the observed relationship.

Our results indicate that intimate partner violence increases the probability of a woman participating in the labour market. This finding is consistent with what Bhattacharya (2015) finds for India, and Fajardo-Gonzalez (2020) for Colombia. We expand this finding though, by touching upon potential mechanisms given the information available in our data. Accordingly, we explore whether (i) women seek employment to reduce their exposure to a violent partner and/or achieve financial self-reliance, (ii) men use violence to extract women's resources (rent extraction) and force them into employment (paid or unpaid), and (iii) the deteriorating effect on women's mental health moderates the relationship between IPV and LFP. Amongst these possible explanations, which may well operate simultaneously and are often difficult to disentangle, our findings provide suggestive evidence that the positive relationship is most likely driven by rent extraction, where men use violence as a means to control women's income and/or labour.

Female LFP has been exceptionally low and stagnant in Turkey. The female LFP rates declined from around 35% in the 1990s to around 20% in the early 2000s, with an improvement since 2010. According to the most recent data, 31.7% of women were noted as being in the labour force (Turkstat, Labor Force Surveys 1990–2021). There is literature proposing a hypothesis of a U-shaped trend for female LFP as countries develop, however, empirical evidence supporting the U-shaped hypothesis is weak and contextual (Gaddis and Klasen, 2014). Even if one was to argue for the U-shaped trajectory, the evolution of this trajectory has been very slow for Turkey (Atasoy, 2017). In addition to its poor performance in women's participation in the labour market, Turkey also lags in

[5] In our data, unpaid family work is defined as women undertaking work in family farms and businesses. Unpaid caring and other activities undertaken in own house which are not market-based are not included in this categorisation.

achieving gender equality. Turkey ranks 68 out of 162 countries on Gender Inequality Index (GII) for 2019 with a score of 0.306, which is one of the worst scores among high HDI countries (United Nations Development Programme [UNDP], 1990-2019). The incidence of IPV is also high in Turkey. Almost four out of every ten ever-married women in the country have experienced physical violence by their husbands; 44% have experienced psychological violence; and 12% have experienced sexual violence in their lifetime (Hacettepe University Institute of Population Studies, 2015). An estimated 32% of ever-married/partnered women aged 15-49 years have been subjected to physical and/or sexual intimate partner violence at least once in their lifetime, this compares to the global average of 27% (WHO, 2021).

A comprehensive analysis using data for Turkey can offer important insights on broadening the discussion on the effect of IPV on women's employment, especially for countries characterised by low levels of female LFP and strong gender inequalities embedded in social and labour market institutions. A review of studies for Turkey by Özcan et al. (2016) find socio-demographic factors (low education and economic level), and history of family violence, both for women and their partner, as key correlates of violence against women. These correlates of violence against women, as noted by the review, are not unique to Turkey and are found in most contexts. However, there are numerous institutional mechanisms, such as legal and criminal laws (e.g., divorce laws, and penalties for domestic violence), and public policies (e.g., welfare support available to women) that can moderate the relationship between IPV and female LFP, hence extrapolating our findings to other settings should be done with caution.

In the following sections we provide a background, where we discuss both the theoretical framework and empirical findings used in the literature, to explain the link from IPV to women's employment. This is followed by the description of the data and the empirical specification that we use. We then present our key findings and possible mechanisms to explain our findings, and finally some concluding discussion.

2. Background

Existing literature has distinguished between multiple, yet interrelated, theoretical explanations in understanding the motivations behind men's violent behaviour towards their wives/partners. Instrumental theories of violence argue that men resort to violence to control or extract women's resources and, thereby, increase their own utility. Especially when women's outside options are limited, for example, due to social stigma associated with being divorced, husbands could use violence or threats of violence as an instrument of rent extraction and exercise control on household resource allocation (Erten & Keskin, 2018; Eswaran & Malhotra, 2011; Hsu, 2017). Rent extraction can work also when there are substantial resources to be had, for example, a case study of domestic violence in rural India by Bloch and Rao (2002) demonstrates that men's likelihood to engage in IPV is notably higher when they are married to wealthier women as there are more resources to extract and the associated returns are higher. Similarly, whilst investigating the effect of a conditional transfer program in Mexico, Bobonis et al (2013) show that beneficiary women are exposed to increased threats of violence. The increased incidence of IPV after welfare payments is also noted by Hsu (2017) for the US.

In addition to using violence as an instrument for extracting women's resources, men may resort to violence as a way of asserting dominance if they feel that their status is threatened. This key motivation has been widely noted by the feminist theory indicating that violence is a tool to maintain male dominance in society by limiting women's access to resources and subordinating their position in societal institutions (Dobash and Dobash, 1979; Yllo, 1993).

An alternative explanation points to the expressive nature of violence and notes that violence can provide intrinsic utility to some men and is used as a means to express frustration (Tauchen et al., 1991). This line of research points to the significant role of emotional cues that trigger men's violent behaviour. For instance, drawing on an expressive interpretation of violence and considering emotional cues accompanied by wins and losses by local professional football teams, Card and Dahl

(2012) document that losses by the local teams, especially when they are unexpected, are associated with increased family violence.

Based on these theoretical explanations behind men's motivations for resorting to IPV, we can formulate a number of different, yet interrelated, mechanisms via which IPV might impact women's LFP. Drawing on instrumental theories of violence, we can suggest two opposing predictions. If men use violence as an instrument to extract women's resources, one would expect IPV to show a positive effect on women's engagement in work. However, men can use violence to maintain their authority and control over women and sustain women's dependency on them in their relationships, by sabotaging women's employment opportunities and restricting them to subordinate roles in the household (Tolman and Wang, 2005). If this is the case, we may observe a negative effect of IPV on women's LFP, especially on their waged work outside the home. On the other hand, if men's use of violence is purely expressive it may not have any economic consequences for women (Tauchen et al., 1991; Haushofer et al., 2019). Thus, we may observe no effect at all, or the effect on women's labour supply could be through other mechanisms such as its adverse effect on women's physical or mental health which are well-known indicators of the probability of getting or keeping a job (Paul & Moser, 2009).[6]

A further mechanism could be drawn building on the exposure reduction theory in criminology which posits that factors which reduce the time partners spend together can decrease the risk of domestic violence (Dugan et al. 1999). This exposure reduction can come in multiple forms, either as legally mandated protection orders which provide reprieve to women from violent relationships, or when women leave the house for a substantial period of time, as would happen if they are working outside the house (Chin, 2012). In the face of IPV, women could seek employment to reduce their exposure to violence at home, meaning a positive effect of violence on women's

[6] Women who are exposed to violence tend to be at a greater risk of having gastrointestinal, gynaecological, and cardiac health problems and mental health problems such as elevated depressive symptoms, and major depressive disorder (Beydoun et al., 2012; Campbell, 2002; Coker et al., 2000). Poor health in turn makes women's link with the labour market tenuous.

participation in the labour market, especially in seeking employment outside the home. In parallel, abused women could look for employment in order to seek financial self-reliance and an opportunity to end an abusive relationship. This is in line with the predictions of the game theoretic models of domestic violence, indicating that exposure to violence can incentivise women to improve their economic status and bargaining power in the household, and maybe eventually leave the abusive relationship, by increasing their labour supply (see, for example, Tauchen et al., 1991; Farmer and Tiefenthaler, 2004; Anderberg et al., 2021).

It must be stressed that these mechanisms are not mutually exclusive and, in any given situation, could operate together, which makes isolation of a single mechanism difficult. For example, while a positive effect of IPV on women's employment may indicate rent extraction, it may also speak to women's attempt to reduce their exposure to abusive partners or seek economic independence to improve their outside options. Similarly, while men may use violence instrumentally to maintain their dominance by restricting women's employment opportunities, male dominance can also manifest itself by forcing women into work and exploiting their labour. That is to say, as the theoretical explanations indicate, there is no single cause of IPV, men's resort to violence can be due to more than one motive or the same motive can bring about varying employment outcomes for women. Hence, the link between IPV and women's employment can be complex and requires a careful investigation of the underlying dynamics that could take place simultaneously, while acknowledging the wider elements such as social, economic and psychological factors related to women, their partners and the community they live in.

The complexity of multiple mechanisms resulting in an observationally similar outcome is reflected in the empirical studies as well. For example, while the possibility of women's search for economic independence is noted by Fajardo-Gonzalez (2021) when exploring the positive effect of IPV on women's employment in Colombia, Bhattacharya (2015) provides descriptive evidence, from India, that violence could bring about financial exploitation. Qualitative evidence also points to varying experiences of abused women. For example, employment is regarded as a safe haven by some

women; it reduces their exposure to physical violence, creates a sense of financial independence, and an escape option from abusive partners (Moe & Bell, 2004; Rothman et al., 2007; Borchers et al 2016; Schuler & Nazneen, 2018). For some women, however, employment means additional tension and stronger coercive behaviour by the husband and an avenue for rent extraction by controlling women's finances (Sirinivasan & Bedi, 2007; Borchers et al, 2016).

With the availability of nationwide surveys on domestic violence against women, as with the rest of the world, there has been emerging literature on the relationship between IPV and female LFP for Turkey. However, unlike our work, the focus has been on the effect of women's employment on the prevalence of IPV. Here too the findings are mixed, while Dildar (2020) finds that women's employment does not have a statistically significant effect on IPV, Erten and Keskin (2021) show that a decline in women's employment results in a significant reduction in IPV. Ours is one of the first papers investigating the effect of IPV on women's employment in Turkey while tackling the endogeneity issue by using an instrumental variable approach and exploring a much more comprehensive range of potential mechanisms.

3. Data and empirical specification

The data we use in the analyses are from 2008 and 2014 surveys of National Research on Domestic Violence against Women in Turkey (NRDVW) conducted by Hacettepe University Institute of Population Studies and financed by the Turkish Ministry of Family and Social Policies the General Directorate on the Status of Women (NRDVW 2008, 2014). In both surveys, questions on violence against women are asked only to women who have ever been in an intimate relationship (this includes ever-married, cohabitating, and those with a partner) and were aged 15-59 years. In the 2008 survey, 17,168 households are surveyed, from which 12,795 women are interviewed regarding the questions on violence against women. In 2014, 11,247 households are surveyed, from which 7,462 women are asked questions about violence. The smaller sample size for the 2014 survey was based on recommendation of the 2008 survey, and was determined by balancing the cost considerations

while keeping the sampling design the same.[7] The NRDVW employed a weighted, stratified and multi-stage cluster sampling, in both the 2008 and 2014 cross-sections, to make the data representative both at the national level and the 12 administrative regions.[8]

For our analysis, we pool the data from the two cross-sections.[9] As the purpose of the 2014 survey was to provide another snapshot of the violence against women in the country, both surveys (2008 and 2014) used similar questionnaires; this allows us to keep the definitions of the variables identical across the two cross-sections. Further, in our analysis, we use the weights provided with the data for each cross-section, to take into account the sampling design.

The survey provides a rich set of information on the characteristics of women and their partners, such as education and employment status. It also has information on the household, such as the number of children in the household, household size, and indicators of the household economic situation. We restrict our analyses to women who are currently married and have been married only once.[10] We focus on currently married women as only these women provide information on the household and the partner. We only include women who have been married once, as we do not want to conflate the information of experience of IPV faced by a woman in the previous relationship(s), which may be why she left the first marriage and will influence her answer to the 'ever experienced' violence. Further, we exclude women with missing observations on the variables included in the

[7] Details of the sampling design can be found in technical reports of NRDVW available at http://www.hips.hacettepe.edu.tr/en/analysis_and_report-320; http://www.hips.hacettepe.edu.tr/en/analysis_and_report-316.

[8] The 12 regions considered are Istanbul, West Marmara, Aegean, East Marmara, West Anatolia, Mediterranean, Central Anatolia, West Black Sea, East Black Sea, Northeast Anatolia, Central East Anatolia, and Southeast Anatolia.

[9] There is no panel element to our data. NRDVW is a nationally representative survey with a sample drawn from a large population at two different points in time, using stratified sampling; the chances of interviewing the same women is thereby slim and any recurrence can be regarded as coincidental. It is, however, possible that as the sampling is at two different points in time, the distribution of the variables might have changed over time, to take this into account we allow for a different intercept for different time periods, by including a year dummy. For further discussion on independently pooled cross sections see, Wooldridge (2020; chapter 13).

[10] This restriction excludes cohabiting couples from our sample. However, a report by The General Directorate of Family and Social Services shows that the share of cohabiting couples in total households in Turkey is less than 0.1%. See https://tinyurl.com/ys4fdped. Accordingly, we expect the effect of excluding cohabiting couples from the sample on our results to be negligible.

analysis, this leaves us with a sample of 12,971 women, with 8,216 from the year 2008 and 4,755 from the year 2014.

Labour force participation

In the surveys, women are asked if they currently work. The specific question that women are asked is, *'Aside from your own housework, did you work in a job whether paid or unpaid within the last one week?'*. All those who respond 'yes' to this question are coded as participating in the labour force, and are then asked further questions on what they do. Those who say 'no' are asked the reason for not working. Women who give their reason for not working as a student, disabled/sick, retired, and just migrated are dropped; looking for/about to start a job are classified as in the labour force, and others are classified as not in the labour force. Those not in the labour force include those who give the reason for not working as a housewife (42%), caring responsibility (30%), family/partner opposed (20%), do not need to work (8%).

In our analysed sample, 37% of the women are in the labour force. Among those who are in the labour force, a third of them (33%) are wage workers, 27% of them are self-employed, 28% of them are unpaid family workers, and about 13% of them report they are either looking for a job or are about to start a job.

Intimate partner violence

In NRDVW, women are asked about their experience of IPV across three domains: physical violence, sexual violence, and psychological violence.[11] Within each category, women are asked a series of questions. *Physical violence*: (i) slapped her or threw something at her that could hurt her;

[11] The questionnaire for the surveys was designed in accordance with the World Health Organization's 2005 "Multi-country Study on Women's Health and Domestic Violence against Women" study (Garcia-Moreno et al., 2005). Questions regarding violence were only asked to selected women in the household after the privacy of the interview was established. In order to increase the response rate and accuracy of the answers, words such as violence, rape or abuse were not used during the interviews. Instead, respondents were asked if they were subject to certain acts of violent behaviours.

(ii) pushed or shoved her or pulled her hair; (iii) hit her with fist or something else that could hurt her; (iv) kicked, dragged her or beat her up; (v) choked or burned her; (vi) threatened to use or actually used a gun, knife or other weapons against her. *Sexual violence*: (i) physically forced her to have sexual intercourse; (ii) had sexual intercourse when she did not want to because she was afraid of what partner might do; (iii) forced her to do something sexual that she found degrading or humiliating. *Psychological violence*: (i) insulted her or swore at her; (ii) belittled or humiliated her in front of other people; (iii) scared or threatened her; (iv) threatened to hurt her or someone that she cared about.

Using answers to the thirteen questions outlined above, a set of dummy variables is created for each of these violent acts. Values of relevant dummy variables within each domain/type of violence (physical, sexual, and psychological) are then summed up to create continuous violence measures for each type of violence, e.g. the continuous score for physical violence can range from 0 (for a woman reporting 'no' to each of the six physical violence questions) to 6 (for a woman reporting 'yes' to each of the six questions). Finally, these measures are transformed into z-scores by standardising their values. The overall IPV variable is created by aggregating the response to all 13 questions, and then transforming them to a standardized z-score. By doing so, we are able to capture the intensity of violence in line with the recent studies taking a similar approach (see, for example, Angelucci and Heath, 2020; Erten and Keskin, 2021).[12] The higher values indicate a greater exposure to violence.

As a robustness check and to compare our results with other work in the literature, we also use a binary indicator of IPV, which takes value 1 if the woman experiences any kind of violence, that is if she answers 'yes' to any of the 13 questions, and 0 otherwise, which means she has answered 'no' to all 13 questions. Also, to see the prevalence of violence at each domain descriptively, a binary indicator is also created for each type of violence, psychological, physical or sexual; the binary indicator takes value 1 if the woman experiences any single act of violence within the domain, and 0

[12] There are numerous statistical and methodological issues in creating composite indices, as we do here for IPV. We discuss these issues in Appendix A of the paper.

otherwise. These domain specific binary indicators allow for the fact that a woman may report not having experienced any physical violence, but reports experience of sexual and/or psychological violence.

The questions about violence were asked both referring to 'ever' and 'over the last 12-months'. Both measures have been commonly used in the literature, usually depending on how the information is collected in the surveys. Studies that were able to investigate both 'ever' and 'past 12 months' violence note that 'ever' violence could capture the long-term/lifetime effects associated with violence while the past 12 months could stand for the more immediate/current effects (see, for example, Panda and Agarwal, 2005). Nevertheless, as also noted by Srinivasan and Bedi (2007) and Bhattacharya et al (2011), it is a challenge to differentiate between the timing of these two measures and separate the effect of the past-12 months of violence from ever-experienced violence as women interviewed often find it hard to distinguish between these two measures (Srinivasan and Bedi, 2007, p. 875; Bhattacharya et al, 2011, p.1686). For our analysis, we look at 'ever' experienced violence, but we also consider violence experienced in the past 12 months in our robustness analyses.

Women are also asked about economic violence/abuse against them (prevented her from working or caused her to quit her job; did not give her money for household expenses; deprived her of her income), we do not include economic violence in our analysis, as it is likely to be highly collinear with our outcome variable of interest, labour force participation.

In Table 1, we report the incidence of IPV by the labour market status of women. Looking at the binary indicators, about 50% of the women in our sample have some experience of IPV, which is much higher than the global average of 26% for women above the age of 15, as reported in WHO (2021).[13] Psychological violence is the most common form of IPV, with 41% of women reporting they experience it. Around 35% of women report they have experienced physical violence, while 12%

[13] The average incidence of physical and/or sexual IPV for ever-married/partnered women aged 15-49 years is estimated to be 32% (with the uncertainty interval of 22%-45%) by the WHO (2021) study, this is over the period of 2000-2018. The equivalent figure for our sample, i.e., if we look at physical and/or sexual IPV for women aged 15-49, is 36%, which is within the WHO's uncertainty interval. Our overall estimate of IPV is higher as we also include psychological violence.

report sexual violence. Among the women who report having experienced some form of IPV, more than half of them report having experienced more than one type of IPV. Looking at the continuous measures of IPV, we find a similar pattern, with the intensity of psychological violence being the highest, followed by physical and then sexual violence. When we look at the two groups of women, defined by their labour market status, we find that both the incidence and intensity of IPV are higher for women who are in the labour force; these differences are statistically significant.

[Table 1 here]

Covariates

Our analysis also includes a set of covariates that are often associated with women's labour force participation. For the woman, we include her age and age squared; a dummy for 'high education' that takes value 1 if she has high school or above education, and 0 otherwise; dummies to capture her region of residence, north, south, east, and central Turkey, with the most populated western region (characterised by a higher development and better socio-economic conditions compared to other regions (Gunduz-Hosgor & Smits, 2007)) as the omitted category and whether or not she lives in urban areas. We also include a dummy for the husband's 'high education' (high school or above) and his employment status, dummies for the husband being a wage worker, an employer or self-employed, and unpaid family worker, with not-working as a base category. We also control for household characteristics such as the number of children aged five or below, and those between 6 and 15 years old, household size and an asset index. As we do not know husband's income or the overall household wealth or income, we use an asset index to capture the level of financial hardship that a household faces. The index is created by counting the number of durable assets, such as refrigerator, computer, car etc., that a household has. The range of the asset index thus goes from 0 (household has none of the listed durable assets) to 18 (household has all the listed durable goods). The justification for using these variables comes from the literature on female labour force participation.

In addition to these well-established determinants of women's labour market participation and the wider employment outcomes, we also consider the possibility of the effect of social norms and traditional values, as these may influence both women's employment and the prevalence of IPV. NRDVW includes a range of questions gauging a woman's attitude toward traditional gender roles. For the following four indicators we code 'agree' as 1 and 'disagree' and 'no idea' as 0: i) a wife should not argue with her husband and keep silent if she disagrees with him; ii) sometimes, it may be necessary to beat children to discipline them; iii) male family members are responsible for the attitudes and behaviours of a woman; and iv) in some cases men can beat their wives. For the following two we code the response 'agree' as 0 and 'disagree' and 'no idea' as 1: i) a woman should spend her own money according to her own will; ii) men should also do housework like cooking, dishwashing, laundry, ironing. As per our coding, response of 1 indicates traditional or conservative social norms and a response of 0 indicates more liberal social norms. The sum of all the indicators goes from 0 to 6, we use the mean value of the indicator, where higher mean value indicates more traditional/conservative social norms. However, conscious of not introducing a potentially endogenous regressor to our analysis, we use the region-level value of the index by calculating local averages for each of 12 geographical regions (excluding her own index value while calculating the local averages) capturing the degree of women's attitudes towards gender roles.

We also include a dummy variable measuring whether or not the husband consumes alcohol, with 0 indicating no consumption and 1 indicating that husband consumes alcohol. Husband's alcohol consumption can directly impact female LFP, as women may be forced to seek employment in the face of the strained household financial situation, especially in low-income households, which often accompanies alcohol abuse by husbands (Schilbach, 2019). Alcohol consumption by husband has also been linked with IPV, with both of them often coexisting and alcohol consumption often being a causal factor for violence (Angelucci, 2008; Bryant & Lightowlers, 2021; Markowitz, 2000).

In Table 2, we report the summary statistics of the covariates by labour force participation status. The average age of women in our sample is 36 years, with about 20% of them having higher

education (high school and above); 45% of them are from the west of Turkey, and 76% live in urban areas. Women who participate in the labour force are, on average, more educated, and older. They also have fewer children and are married to more educated husbands compared to non-participating women. The incidence of alcohol consumption by husbands is also higher among those who are in the labour force. An urban residence is less common among women participating in the labour force, resulting from the significant share of unpaid family workers, primarily in rural areas and agricultural production.

[Table 2 here]

Empirical specification

To examine the relationship between labour force participation and intimate partner violence, we estimate the following relationship:

$$y_i = \alpha_0 + \lambda_{LPM} IPV_i + \delta_0 X_i + \varepsilon_{0i} \quad (1)$$

Where y_i is a binary variable capturing the labour force participation of women; IPV_i is intimate partner violence faced by the women; X_i is the set of covariates; α_0, λ_{LPM}, and δ_0 are sets of parameters to be estimated; and ε_{0i} is the error term. Equation (1) is estimated using a linear probability model (LPM).

The key parameter of interest in equation (1) is λ_{LPM}, the coefficient of IPV. This gives us the association between labour force participation and intimate partner violence. However, as the literature reviewed above suggests, IPV may be an endogenous variable, and we are particularly concerned with the possibility of simultaneity. To address this endogeneity, we estimate a linear two-stage least squares (2SLS) specification. The first stage regression is given as:

$$IPV_i = \alpha_1 + \phi Z_i + \delta_1 X_i + \varepsilon_{1i} \quad (2)$$

where X_i is the same set of covariates as in equation (1); Z_i is the set of instrumental variables; α_1, ϕ, and δ_1 are sets of parameters to be estimated; and ε_{1i} is the error term. The second-stage regression is now given as:

$$y_i = \alpha_2 + \lambda_{2SLS}\widehat{IPV}_i + \delta_2 X_i + \varepsilon_{2i} \quad (3)$$

where, $\widehat{IPV}_i$ is the predicted intimated partner violence, estimated from equation (2), λ_{2SLS} the main parameter of interest; α_2.and δ_2 are sets of parameters to be estimated; and ε_{2i} is the error term. For the validity of the instrument we require two assumptions, first $\phi \neq 0$, and second, $E(Z_i\varepsilon_{2i}) = 0$.

In addition to the simultaneity issue which we intend to address using an IV approach, there may be other sources of endogeneity which is important to acknowledge here. In our case, one particular source of endogeneity could be non-random selection into violent relationships and omitted variables bias. We believe our extensive set of controls capturing the characteristics of women, their partners, and households, and the societal norms, reduce this possibility. However, it is important to remain cautious as there may still be some residual unobserved confounders which we may not have been able to capture fully. Another important source of bias could be measurement error. It is possible that women underreport the incidence of IPV. As indicated earlier, NRDVW pays attention to establishing the privacy of women and avoids using words such as violence, rape or abuse during the interviews to ensure accuracy, however, the likelihood of a measurement error remains. We discuss the consequences of the possibility on our estimates in Appendix A.

Instruments

We consider two potential instruments in our analysis, which impact IPV but are unlikely to have a direct bearing on female LFP. The first variable captures the woman's mother's experience of IPV. Women are asked the question, *'When you were a child, did your father [or your mother's partner] harm your mother physically?'*, she can answer yes, no, or do not know. From this, we generate a dummy variable, *mother experienced IPV*, taking value 1 if the answer is yes and value 0 if the answer is no or do not know. The second variable captures the husband's past experience of violence. The specific question women are asked is, *'Has anyone in your (most recent) husband's/partner's family shown physically violent behaviour towards your husband/partner?'*, she can answer yes, no, or do not know to this question. From this, we generate a dummy variable,

husband experienced violence, which takes value 1 if the woman answers yes and value 0 if the woman answers no or do not know.[14]

Justification for these variables as instruments comes from the literature on intergenerational transmission of violence. It is widely accepted that children who grow up in abusive households, where they are either subject to violence or witness violence within the family, either perpetuate the same violence on others or be the victims of it in their adulthood. Specifically, men raised in violent homes are more likely to be the perpetrators as adults, and women who witness violence in their family of origin are more likely to remain with an abusive spouse (Kalmuss, 1984; Straus & Gelles, 1990). Moreover, using Turkey's NRDVW 2008 Survey, Yüksel-Kaptanoğlu et al. (2012) look at the correlates of IPV faced by women. Their findings also establish that the level of violence is much higher when one or both of the partners is/are exposed to violence in childhood.

While there is no direct relationship between witnessing or experiencing violence in childhood and labour force participation in adulthood, there is a possibility of an indirect relationship. Witnessing violence in childhood can scar and traumatize women, which can have an adverse impact on their cognitive and non-cognitive skills, and health which can limit their labour force participation. Similarly, if men witness or experience violence in their families it may adversely impact their education and health and hence the possibility to earn, which in turn increases the household financial hardship inducing women to seek employment. Growing up in a violent environment may also translate into internalised traditional gender norms normalising the subordinate role of women and alcohol/substance use.

Additionally, one may argue that our instruments may be correlated with error term, and they may have a direct effect on female LFP as a result of assortative matching; that is couples choose each other in the marriage market (Kalmijn, 1994; Pollak, 2004). We address these indirect impacts,

[14] Bhattacharya (2015) suggests mother-in-law's experience of violence as an instrument. We have this information in our survey and considered using this instrument. However, the coefficient on this instrument was never significant in our reduced form regressions (which we explain below), so we did not use it in our main analysis.

at least partly, by the range of covariates included in our analysis, such as the education and occupation of women and their husbands, which are the possible factors underlying the match.

In our sample, about 26% of women report their mother to have experienced IPV, and 22% report that their husband experienced violence. In Table 3, we report the correlation of the two instrumental variables with the IPV experienced by the women themselves. There is a significant and positive correlation between women's own experiences of IPV and the two instrumental variables. Women who themselves experience IPV also report a higher incidence of IPV faced by their mothers, and a higher incidence of their husband having experienced violence within their families.

[Table 3 here]

4. Results

Linear Probability Model (LPM) results

We start by estimating the LPM, given by equation (1), where the dependent variable is a binary indicator of labour force participation, and we do not correct for the potential endogeneity of IPV. Results are reported in the first column of Table 4. Looking at the results for the key variable IPV, we find a positive and statistically significant association between IPV and women's LFP. A one standard deviation increase in IPV intensity is associated with a 2.3% increase in the probability of LFP.

The covariates of female LFP included in the estimated model have the expected signs. Higher education among women is associated with higher LFP, while both the number of children and household size are negatively associated with women's LFP. Living in wealthier households (captured by the asset index) is negatively associated with women's LFP. Therefore, as with the previous studies, economic hardship appears to be a significant push factor for women's participation in the labour force. Similarly, husband's alcohol consumption, which is likely to strain household finances, increases the probability of women entering the labour force. We find no relationship between the husband's education and women's LFP. However, there is a positive association between

husband's labour market status (in any form) and women's LFP. Regional social norms have no significant association with women's LFP. In accordance with the descriptive statistics, the coefficient for urban residence is negative, probably due to high rates of unpaid family workers in rural areas.

Instrumental variable results

As noted before, we utilise theoretical and empirical literature on inter-generational transmission of violence when choosing our instrumental variables. In our analysis, we consider two variables as potential instruments, *mother experienced IPV*, and *husband experienced violence*. To check the instrument's validity, we run a reduced form regression (results reported in Table A1 in the Appendix), where instead of IPV we include the potential instruments directly in the LFP equation.[15] We try different specifications, including the instrumental variables one at a time, then including all of them together. Husband experienced violence and mother experienced IPV, both have a significant positive association with the LFP of women.

Table 4 reports results from both the first and second stages of the 2SLS estimation. Looking at the first stage results (column 3), holding high levels of education (both for woman and her husband), husband's employment status (except for unpaid family worker), and higher household wealth (asset index) all seem to act as deterrents to IPV. Husband's alcohol consumption is associated with higher IPV which is expected since alcohol abuse is argued to be a trigger for violence (Angelucci & Heath, 2020). IPV does not seem to be associated with the number of children younger than 5 years old, while it increases with the number of children of schooling age. Regional social norms have no bearing on the IPV faced by women.

[15] Reduced form regression ($y_i = \alpha_3 + \rho Z_i + \delta_3 X_i + \varepsilon_{3i}$) gives us the direct effect of the instrument on the outcome of interest. The estimate obtained from the second stage of the 2SLS procedure (λ_{2SLS}) can be shown to be the ratio of the estimated coefficient for the instrument (ρ) obtained from the reduced form regression and the estimated coefficient for the instrument (ϕ) obtained from the first stage regression of the 2SLS regression; i.e.$\lambda_{2SLS} = \rho/\phi$. For the instrument to be valid we require both ρ and ϕ to be statistically significantly different from zero. For a full discussion see Angrist and Pischke (2014, chapter 3).

In the first stage regression, our instruments are statistically significant and positive in sign, as we would expect. If a husband has experienced violence from his family, he is more likely to use violence against his wife. Similarly, if the woman's mother experienced IPV, she herself is more likely to experience IPV. These findings are in line with the arguments of the intergenerational 'cycle of domestic violence'. Our instruments pass all the standard tests. For weak identification, we report the Kleibergen-Paap F statistic which is well above the rule-of-thumb threshold of 10. A recent paper by Lee et al. (2020) argues that in case of one instrumental variable the first stage F-statistics should exceed 104.7. F-stats in our case exceeds this high level as well. We also use the procedure suggested by Montiel Olea and Pfluueger (2013), to test for weak instruments in the presence of heteroscedasticity. We obtain an effective F-test of 742.12, with the threshold of 5% and the 2SLS critical value of 2.996. The test results suggest rejection of the null hypothesis of weak instruments. In parallel, the endogeneity test indicates that we cannot treat IPV as an exogenous variable.

Second stage results are reported in column 2 of Table 4. We still find a positive and significant relationship between IPV and LFP. A one standard deviation increase in the intensity of IPV faced by women increases her probability of LFP by 6.2%. The estimated coefficient from the instrumental variable regression is bigger in magnitude. It is possible for the 2SLS estimate to be larger in magnitude than the coefficient estimated from the LPM, as the latter estimates the average treatment effect over the entire population while the former estimates the local average treatment effect (LATE). LATE is the change in LFP due to IPV, for those couples for whom the instruments induce a change in the incidence of IPV, i.e., the compliers. Compliers are the subgroup whose behaviour is likely to change as a result of the change in the instrument.

The results for the other covariates included in the model are similar to the LPM model, except husband's alcohol consumption which is no longer significantly associated with the woman's LFP. However, as it is significantly associated with IPV (first stage result), it reinforces the notion of

alcohol abuse as a trigger for male violence and any impact it has on female LFP is likely to be indirect via IPV.[16]

[Table 4 here]

Validity of the instruments

We do a series of robustness checks for the validity of our instruments, though both instruments pass all the statistical tests. As a first check, we estimate our main 2SLS model using one instrument at a time. The population of compliers for the two instruments is different. When we use *husband experienced violence*, compliers are couples in which the husband's propensity to inflict IPV is affected by his experience of violence. When we use *mother experienced IPV*, compliers are couples in which the incidence of IPV faced by the woman is affected by her childhood exposure to violence. The results remain the same, irrespective of the instrument we use (see Appendix Table A2). When different instruments generate similar results across two complier subpopulations which may overlap but are unlikely to be identical, then the 2SLS results which are the weighted averages of the two instruments can be seen as more precise estimates of the causal effect (Angrist & Pischke, 2014, chapter 3).

We also consider whether our instruments fail to satisfy the exclusion restriction, i.e., $E(Z_i \varepsilon_{2i}) \neq 0$. Although we control for a wide range of individual characteristics to address the paths via which exposure to violence may have indirect effects on LFP, there can be additional elements which we cannot control in our model (such as reduced social ties/networks). Also, it is possible that some of the factors we consider in our model which are measured using scales (such as gender norms) may not account for these constructs fully which in turn can leave residual confounding effects.

[16] Despite the 2SLS regression results presenting no association between husband's alcohol consumption and woman's LFP, we ran two further checks as alcohol consumption can be conceived as an endogenous variable. First, we dropped husband's alcohol consumption from our analysis, the results indicate no qualitative or quantitative change in any estimated parameter in the model. Second, we looked at the correlation between husband's alcohol consumption and our two instruments, which were very low (0.10 with husband experienced violence and 0.05 with mother experienced IPV). This further ensures that any bias resulting from including husband's alcohol consumption in our model is likely to be very small.

Finally, the exclusion criteria might be violated through assortative matching and the impact of the instruments on the education and health of both the woman and her partner, as we indicate in section 3 above. Acknowledging these potential issues, we use the imperfect instrumental variable approach developed by Nevo and Rosen (2012), which relaxes the assumption of correlation between the instrument and the second stage error terms, and provides bounds on the parameter of interest, λ_{2SLS}.

In the presence of two instruments, under the assumptions that the correlation between the endogenous variable, IPV, and the instruments is positive (which is true in our case, see Table 4), and that the correlation between the endogenous variable and the error term is negative, i.e. $E(IPV_i, \varepsilon_{2i}) < 0$, it is possible to get a two-sided bound on the true parameter, λ.[17] This two-sided bound is given as: $\lambda_{2SLS} \geq \lambda \geq \min\{\lambda^1_{2SLS},\ \lambda^2_{2SLS}, \lambda_{LPM}\}$, where λ^1_{2SLS} and λ^2_{2SLS} are the estimated coefficients from 2SLS model when each instrument is used on its own. Details of the bounds under different conditions, including cases not originally discussed in Nevo and Rosen (2012), are given in Clarke and Matta (2018). As reported in Table 4 our 2SLS estimated parameter is $\lambda_{2SLS} = 0.062$, and our LPM is $\lambda_{LPM} = 0.023$; while $\lambda^1_{2SLS} = 0.061$ and $\lambda^2_{2SLS} = 0.064$, the estimated parameters from using the two instruments separately, reported in Appendix, Table A2. Given these values, we get the true parameter to be positive and bounded between the 2SLS estimate when using husband's experience of violence as the instrument and the LPM estimate, i.e., $0.061 \geq \lambda \geq 0.023$. This means our overall conclusion that IPV increases LPM still holds even when we relax the exclusion restriction.

Finally, we check for the assumption of monotonicity. Monotonicity requires that there should be no defiers in the population. Individuals whose participation in the treatment (here IPV) is negatively associated with the instrument are called defiers. In the presence of defiers the 2SLS estimate is the weighted difference between the effect of the treatment among compliers and defiers

[17] Assumption, $E(IPV_i, \varepsilon_{2i}) < 0$, requires that the unobserved variables that are likely to impact LFP of women are negatively corelated with IPV. Validity of this assumption comes from the assortative matching argument: individuals who experienced/witnessed violence in childhood are more likely to engage in/report higher IPV and experience adverse psychosocial issues as an adult, these unobserved factors are more likely to be negatively correlated with women's labour market productivity and likelihood to work; for details see Fajardo-Gonzalez (2021).

(Angrist et al., 1996). Considering husband's experience of violence as an IV, monotonicity assumption would require that there should be no couple in the population for whom IPV=0 only if *husband experienced violence* = 1, or IPV=1 only if *husband experienced violence* = 0. Similarly, we can define the population of defiers for the second IV, mother experienced IPV.

We test for monotonicity using the method proposed by Angrist and Imbens (1995) since we have a continuous endogenous variable and a binary instrument. Following them, we consider the cumulative distribution functions (CDF) of the continuous indicator of IPV under the alternate values of the instruments. We compare the CDF for continuous IPV variable when *husband experienced violence* = 1 versus when *husband experienced violence* = 0, if the two CDF's do not cross then the monotonicity assumption is assumed to hold. Similarly, we compare the CDF of IPV when *mother experienced IPV* =1 versus when *mother experienced IPV* =0. For both instruments we find that the CDFs do not cross, the CDFs are shown in Figures A1 and A2 in the Appendix, and the global test for equality of the two CDF's is rejected with a p-value<0.0001 for both instruments (Goldman and Kaplan, 2018). Hence the monotonicity assumption holds in our case.

Robustness Checks

In this section, we report some further robustness checks to see whether our results are driven by the choice of the definition of violence variable or our estimation method.

So far, we have captured violence as a composite of physical, psychological, and sexual violence. If a particular kind of violence drives the effect of IPV on LFP, our coefficient for IPV might be biased and/or underestimated. To account for this, we estimate our models separately by using the z-scores for each kind of violence. Table 5 presents the results from 2SLS models estimates for the three kinds of violence, psychological, physical, and sexual, each are defined as a continuous

variable (z-score). The coefficients for all three kinds of violence are statistically significant and have a positive sign as our composite IPV variable.[18]

[Table 5 here]

The second robustness check we conduct is to see if our results are sensitive to the distribution of our key independent variable. There are different approaches to measuring IPV in the literature. While some use a binary measure for IPV (e.g., Bhattacharya, 2015), some employ z-scores (e.g., Angelucci & Heath, 2020; Erten & Keskin, 2021; Haushofer et al., 2019) as a measure for violence. Our main results are provided for the continuous measure using z-scores, however, we repeat our estimations with a binary measure of violence. These results are qualitatively similar to those for the continuous measure, results are reported in Table A3 in the Appendix.

We perform two additional checks to see if the choice of violence variable regarding the time period and the estimation method makes a difference. In terms of method, we estimate a probit model as an alternative to the LPM model and an IV-probit model as an alternative to 2SLS. Results are reported in Table A4 in the Appendix. We obtain similar results as in the case of linear specification. In terms of the timing of violence, although ever experience of IPV is our preferred measure, we also considered experience of violence within the last 12 months. However, our robustness checks show that results do not change qualitatively if we use experience in the last 12 months to measure IPV (results available on request).

Finally, it is possible that these women have some experience of IPV from a previous relationship which was not a legal marriage. For each of the 13 questions on IPV, women are asked about their experience of IPV from any past relationship. There are 108 women in our sample who report violence from a relationship before their current legal marriage. When we drop these women

[18] In terms of their magnitude, sexual violence has the largest coefficient while psychological violence has the smallest coefficient. The estimated IV coefficient is inversely related to the correlation between the endogenous variable and the instrument. The correlation between sexual violence and different instruments (see Table 3) is lower than for other kinds of violence, hence its IV estimate is the largest. The aggregate measure has the highest correlation and the lowest estimated coefficient.

from our analysis, the results we get remain same, both qualitatively and quantitatively (results available on request).

5. Potential Mechanisms

Building on the theoretical explanations for IPV, in this section, we investigate potential mechanisms which may explain the positive link from IPV to women's labour force participation. Firstly, one may argue that women seek employment to reduce their exposure to an abusive partner. The exposure reduction argument asserts that IPV mainly occurs in the home domain where women have no opportunity to physically distance themselves from the perpetrator (Chin, 2012; Dugan et al., 1999). Accordingly, women who are subject to violence may choose to look for employment to reduce their exposure to the perpetrator. To see if this argument can explain the positive relationship, we take advantage of the information we have about the type of women's employment. While being wage workers, and to some extent being self-employed, can provide women with the opportunity of distancing themselves from their violent husbands, unpaid family work is unlikely to provide this, as unpaid family work includes proximity to husbands, making it an unlikely option for exposure reduction. Accordingly, if this mechanism solely explains the positive effect of LFP on overall LFP, then we should expect IPV to increase the probability of being a wage worker, self-employed, or looking for a job or about to start a job. In contrast, the probability of being an unpaid family worker should decrease or not change with IPV.

To test this mechanism, we estimated the 2SLS model for each form of employment separately. In these models, dependent variable: $y_i = wage\ worker_i$, takes value 1 if the woman is in the labour force and works as a wage worker; $y_i = self - employed_i$, takes value 1 if the woman is in the labour force and is self-employed; $y_i = unpaid\ family\ worker_i$, takes value 1 if the woman is in the labour force and works as an unpaid family worker; and $y_i = looking\ for\ a\ job_i$,

takes value 1 if the woman is either looking for a job or starting a new job. In all four cases, the dependent variable takes value 0 if the woman does not participate in the labour force.[19]

The results from these estimations, presented in Table 6, show that as opposed to not participating in the labour force IPV increases the probability of being a wage worker and self-employed. These are consistent with the expectations of the exposure reduction argument. They may also speak to the possibility that women seek employment to achieve financial self-reliance to have the option to escape an abusive marriage.[20] However, for women looking for a job or starting a job, the estimated coefficient on IPV is nearly zero and insignificant (not reported in the table). Further, we also see a statistically significant (though at 10%) and a positive coefficient for IPV in the estimation for unpaid family work category.[21] These results show that the exposure reduction mechanism does not explain the positive relationship between IPV and LFP – at least, it is not the single mechanism that drives this relationship.

[Table 6 here]

In order to test the exposure reduction mechanism with an alternative strategy, we considered women whose husbands work away from home. If husband's work outside the home already provides

[19] We could define the dependent variable to represent the different choices faced by women: do not participate in the labour force, participate as a wage worker, participate as self-employed, participate as unpaid family worker, or look for a job or about to start a job, and then estimate it as a multinomial logit model. However, in the multinomial logit framework we will not be able to address the presence of an endogenous dummy variable. Hence, we estimate separate binary models.

[20] Women in the survey are asked if they own any savings in the bank, to which they can respond as: no, by herself, or with other people. In our sample, 97% of women report no. So we cannot explore the financial self-reliance argument further using this information.

[21] These results hold in both LPM and 2SLS estimation, however, when we look at the endogeneity test for the sub-sample of wage workers and unpaid family workers, we are not able to reject the null hypothesis that the variable can be treated as exogenous. This indicates that when looking at employment separately LPM estimates are more efficient. Furthermore, in order to see if the results for the effect of IPV on women's unpaid family work are mainly driven by women who live in rural areas as working in family farms in rural agricultural activities is a common form of unpaid work in Turkey, we estimated the models separately for these women in rural and urban areas. The estimated coefficient remains positive for both rural and urban areas, although it is statistically not significant, and the standard errors also increase as the sample size becomes smaller. Results are available upon request.

a reduction in exposure, we may expect no statistically significant relationship between IPV and LFP. To test this, we estimate our model for a subsample of women for whom the husband is a wage-earner and is in all likelihood expected to work away from home. For these women, we found positive and statistically significant effects for women's possibility of participating in the labour market and being in self-employment and unpaid family work. However, the effects were not statistically significant for women's waged work (results available on request). Once again, this additional analysis shows that we have partial evidence for the exposure reduction mechanism.

The second mechanism we test is based on instrumental theories of violence, particularly the possibility that men use violence as an instrument for rent extraction and control the household's resource allocation favouring their preferences. The rent extraction can be in the form of control over women's economic outcomes such as their labour or personal income. If this mechanism holds, using violence as a means of control, men can force women into income-generating activities to extract the rent created by women's labour. In principle, this mechanism can also apply to unpaid family work in which women's labour is a form of free input to agricultural production or family business that are mainly controlled by men.

To explore this mechanism, we use the response of the women to a question in the survey that asks them the following question: *Are you able to spend the money you earn as you wish, or do you have to give all or part of the money to others (your spouse or family)?*. The question is asked only to 20% of women in our sample who report having a personal income. A woman can give three possible responses: self/own choice, gives part, gives all. From this, we define the *income control* variable, taking three response possible values: 0 if woman has full control (66% of women responding self/own choice), 1 if husband has some control (17% gives part), and 2 if husband has full control (17% gives all). In order to see if husband's control over women's income is associated with IPV, we estimate an ordered logit model, where we regress the income control variable over IPV and the same set of covariates that we include in our main model. The results of this estimation, in Table 7, show a positive and statistically significant association between husband's control over

women's personal income and IPV. This provides some evidence for the rent extraction mechanism. This evidence of rent extraction mechanism suggests that even though women may seek employment and self-reliance to escape an abusive marriage, there is a possibility that their efforts are blocked by their partners.

[Table 7 here]

Finally, we consider the possibility of IPV affecting women's LFP through mental health channel. In NRDVW, women are asked a series of questions related to their mental health. Using this set of questions, we create a mental health index value for each woman.[22] Table 8 column (1) gives the LPM results with mental health and the interaction of mental health with IPV included in the model. The coefficient on mental health, though negative as expected, is insignificant. However, the interaction term has a negative coefficient and is significant. The LPM results indicate that mental distress may moderate the effect of IPV on women's LFP. We also run the 2SLS model, results reported in column (2); the results indicate that mental health by itself now significantly lowers labour force participation (as expected), and its interaction with IPV is also negative and significant.[23] However, we refrain from making strong claims as mental health is likely to be endogenous.

[Table 8 here]

6. Concluding discussion

[22] Specifically women were asked if they had complaints during the last four weeks: frequent headaches; poor appetite; problem with sleeping; frightened easily; hands shaking; feeling nervous, tense or worried; poor digestion; trouble thinking clearly; feel unhappy; cry for small things; troubles to enjoy daily activities; difficulty in decision making; troubles in doing daily activities; though of not playing a useful part in life; lost interest in enjoying things; feeling worthless; though of ending life; feeling tired all the time; uncomfortable feeling in stomach; and tired easily. To each question women could answer either yes (coded as 1) or no (coded as 0). We sum the answers to these questions giving us a raw score that goes from 0 to 20, which is then standardized to get the z-score and used in the regression analysis.

[23] As we have an interaction of mental health variable with our endogenous variable, IPV, for the 2SLS estimation we interact each of our two IVs (*husband experienced violence* and *mother experienced IPV*) with the mental health variable and use them also as IVs.

Violence against women is pervasive, with 1 in 3 women globally being exposed to IPV over their lifetime. Incidence of violence increases with every kind of emergency, including natural disasters (Harville, 2011; Rao, 2020), civil unrest (Clark et al., 2010; Guruge et al., 2017) and epidemics (WHO, 2020). Understanding the impact that this violence has on the outcomes (economic, social, health) for women is of paramount of interest across a range of disciplines.

In this paper we add to the scarce literature on the effect of IPV on women's labour market outcomes, using rich, nationwide data for Turkey. Our key contribution is in addressing endogeneity and producing more credible estimates for the link from IPV to labour force participation. To this aim, we benefit from an IV approach using theoretically and empirically sound instruments and controlling for a wide range of factors that influence women's participation in the labour market. Additionally, we also explore the mechanisms underlying the relationship.

Our results point towards a significant and positive link between IPV and female labour force participation. We show that the positive association remains when distinguishing between different forms of violence. Additionally, the estimation is robust across different measurements for violence (e.g., binary or continuous, over the last 12 months or ever) and estimation methods (linear or non-linear specification).

We consider potential mechanisms that could explain why IPV incidence increases women's possibility to participate in the labour market. First, we explore the exposure reduction argument, as women exposed to violence may seek employment outside the home to reduce the time they spent with their partners and the violence they experience. Moreover, income from employment might bring about financial self-reliance offering women an outside option. The two links, reduction in exposure and seeking self-reliance, are not mutually exclusive. The fact that we find significant positive results for all kinds of paid employment (wage workers and self-employed) supports this hypothesis. However, we also find that violence increases the probability of being an unpaid family worker, which, by definition, can be home-based, or involves working in small scale family farms with other family members in rural areas (Jansen, 2004). Moreover, unpaid family work does not generate

personal income for self-reliance. When we test this mechanism using a subsample of women whose husbands are wage workers, the positive association between IPV and women's participation in the labour market and being in self-employment and unpaid family work persist. These all indicate that there might be further mechanisms at play.

Second, we explore whether men use violence as an instrument to extract or control women's resources in line with their own preferences. This would suggest that husband uses violence to either make the woman provide free labour in the family business (case of unpaid family worker) or make her work outside the house and then appropriate her earnings (this would apply to wage workers and self-employed). Although associative, we find supporting evidence for the rent extraction argument. Using the information on income control available for women who do work and are paid for their work, we investigate how men`s control over women`s income changes with IPV. Results show a positive association between husband`s control over women's personal income and IPV, indicating that working women who face IPV are more likely to hand over the control of their income to their husbands.

Finally, we investigate the effect of IPV on LFP through its impact on women's mental health. Our findings suggest that mental health may act as a moderator between IPV and LFP; however, further evidence is needed as mental health variables are likely to be endogenous.

Although we provide a comprehensive account of the effect of IPV on women's employment, we acknowledge some limitations that are mostly related to data constraints. Firstly, we do not have a panel data which would have enabled us to track the effect of IPV on women's employment over time and provide further evidence on causality. Secondly, there may still be some important factors which we were not able to control fully despite our rich data set. In particular, the information regarding husbands' income and/or a measure for women's relative incomes could have been helpful for a better understanding of women's bargaining power in the house and the possibility of rent extraction. Additional unobservable factors (such as the scarring psychosocial effects of IPV on women witnessing violence as a child), the possibility of assortative matching and underreporting of

IPV are likely to further influence the validity of our instruments even though we have conducted an extensive set of robustness checks. Finally, while testing the mechanisms, we had to rely on a sub-sample of women which further prevented us from making strong claims.

Nevertheless, our findings provide important insights into the complexity behind the ways in which IPV affects women's labour force participation and employment. There are multiple motivations behind men's resort to violent behaviour. It is important to reiterate that the multiple mechanisms we test in this paper can act simultaneously and it is difficult to isolate one single mechanism from the other. It is likely that women seek to reduce the time they spend with abusive partners and achieve financial self-reliance; however, it is evident that, men may use violence as a tool to extract women's resources; either their income or unpaid labour. The complex relationship between IPV and LFP of women is further made intractable given the various institutional and social mechanisms that can determine this relationship, such as the divorce laws, gender and social norms, gender ratios (resulting from male child preference), presence of children in the household, and limited outside options for women (see Anderberg et al., 2021, and Amaral and Bhalotra, 2017, and references therein). Our findings therefore further stress that any development policy aimed at improving the situation of women has to keep in frame this complex relationship and the environment it plays out in.

It is now widely acknowledged, across a range of studies in development economics, development studies and criminology, that intimate partner violence can at times be a consequence of well-intended policy interventions aimed at helping women, such as conditional cash transfers and welfare payments (Bobonis et al., 2013, Hsu, 2017), interventions targeted at family planning (McCarthy, 2019), increasing women's political representation (Lnu et al., 2022), and even increasing resources for domestic violence prevention (Dugan et al., 2003). In this regard, while promoting women's employment is the most dominant development policy approach in improving women's economic and social well-being, our results suggest that addressing the high incidence of intimate partner violence faced by women calls for a more meticulous policy design. Reducing violence

against women and enabling women to participate in the labour market without risking to introduce an additional area for exploitation require a carefully designed multidimensional approach with prevention efforts at individual, family, and community levels along with legal and institutional measures.

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Table 1: Prevalence of Intimate Partner Violence (IPV) by Labor Force Participation (LFP) status of women

	(1) LFP = 0	(2) LFP = 1	(3) ALL
Continuous measure of IPV			
IPV	-0.0589	0.0158***	-0.0313
	(0.940)	(1.033)	(0.976)
Psychological violence	-0.044	0.022***	-0.019
	(0.968)	(1.018)	(0.987)
Physical violence	-0.052	0.005***	-0.031
	(0.945)	(1.020)	(0.974)
Sexual violence	-0.058	0.017***	-0.031
	(0.911)	(1.062)	(0.970)
Binary indicator for IPV			
IPV	0.502	0.522**	0.509
	(0.500)	(0.500)	(0.500)
Psychological violence	0.402	0.429***	0.412
	(0.490)	(0.495)	(0.492)
Physical violence	0.339	0.360**	0.347
	(0.474)	(0.480)	(0.476)
Sexual violence	0.109	0.128***	0.116
	(0.311)	(0.334)	(0.320)
N	8130	4841	12971

Note: For the continuous measures of overall violence, we add the responses to all 13 questions and then standardize it as a z-score (the reason we do not have mean 0 and SD 1 is due to sampling weights). Continuous measures of different types of violence are created similarly, e.g., for physical violence we add the response to all 6 questions and standardize it as a z-score. * Indicates the statistically significant difference between the prevalence rates for the two groups of women defined by their LFP. Standard deviation in parentheses. * p<0.1, ** p<0.05, *** p<0.01.

Table 2: Covariates by LFP status: mean (standard deviation)

	(1) LFP = 0	(2) LFP = 1	(3) ALL
Age	35.84	37.90	36.61
	(10.76)	(9.697)	(10.43)
High education	0.168	0.277	0.208
	(0.374)	(0.448)	(0.406)
Husband: Not working	0.141	0.114	0.131
	(0.348)	(0.318)	(0.337)
Husband: employer or self-employed	0.269	0.306	0.283
	(0.444)	(0.461)	(0.450)
Husband: wage worker	0.583	0.549	0.571
	(0.493)	(0.498)	(0.495)
Husband: unpaid family worker	0.007	0.031	0.016
	(0.0810)	(0.173)	(0.124)
Husband: high education	0.366	0.392	0.376
	(0.482)	(0.488)	(0.484)
Husband: alcohol consumption	0.0715	0.104	0.0836
	(0.258)	(0.306)	(0.277)
Number of children age<=5	0.576	0.312	0.478
	(0.752)	(0.591)	(0.708)
Number of children ages 6-15	0.782	0.693	0.749
	(1.029)	(0.940)	(0.998)
Household size	4.431	4.066	4.296
	(1.956)	(1.780)	(1.901)
Asset index	8.909	9.080	8.973
	(2.640)	(2.851)	(2.721)
Social norms, regional (standardized)*	-0.327	-0.455	-0.374
	(0.936)	(0.754)	(0.875)
Urban area	0.819	0.658	0.759
	(0.385)	(0.475)	(0.427)
Region: West	0.443	0.448	0.445
	(0.497)	(0.497)	(0.497)
Region: South	0.110	0.142	0.122
	(0.313)	(0.349)	(0.327)
Region: Central	0.214	0.214	0.214
	(0.410)	(0.410)	(0.410)
Region: North	0.0563	0.102	0.0733
	(0.231)	(0.303)	(0.261)
Region: East	0.176	0.0941	0.146
	(0.381)	(0.292)	(0.353)
N	8130	4841	12971

Note: Regional social norm has been standardised to have mean 0 and SD of 1; the below zero value here is due to sampling weights.

Table 3: Correlation coefficient between IPV ever (aggregate and types of violence) and instrumental variables

	(1) IPV	(2) Psychological violence	(3) Physical violence	(4) Sexual violence
Correlation between continuous measures of IPV and:				
Husband experienced violence	0.283***	0.267***	0.246***	0.181***
Mother experienced IPV	0.224***	0.216***	0.196***	0.131***
Correlation between binary indictors for IPV and:				
Husband experienced violence	0.226***	0.233***	0.218***	0.168***
Mother experienced IPV	0.217***	0.202***	0.197***	0.132***

Note: * p<0.1, ** p<0.05, *** p<0.01.

Table 4: Estimated coefficients from LPM and 2SLS.

	(1)	(2)	(3)
	LPM	2SLS	First stage
Dependent variable:	LFP	LFP	IPV
IPV	0.023***	0.062***	
	(0.005)	(0.017)	
Age	0.046***	0.046***	0.008
	(0.004)	(0.004)	(0.007)
Age squared	-0.001***	-0.001***	-0.000
	(0.000)	(0.000)	(0.000)
High education	0.196***	0.200***	-0.112***
	(0.015)	(0.015)	(0.028)
Husband: employer or self-employed	0.064***	0.067***	-0.094**
	(0.016)	(0.016)	(0.038)
Husband: wage worker	0.045***	0.051***	-0.167***
	(0.015)	(0.016)	(0.038)
Husband: unpaid family worker	0.298***	0.302***	-0.087
	(0.037)	(0.037)	(0.073)
Husband: high education	0.002	0.006	-0.066***
	(0.012)	(0.012)	(0.023)
Husband: alcohol consumption	0.046**	0.016	0.666***
	(0.019)	(0.022)	(0.049)
Number of children age<=5	-0.102***	-0.102***	-0.017
	(0.007)	(0.008)	(0.015)
Number of children ages 6-15	-0.028***	-0.030***	0.024**
	(0.006)	(0.006)	(0.011)
Household size	-0.012***	-0.013***	0.014**
	(0.003)	(0.003)	(0.006)
Asset index	-0.010***	-0.009***	-0.025***
	(0.002)	(0.002)	(0.004)
Social norms	0.005	0.006	0.010
	(0.010)	(0.010)	(0.020)
Urban area	-0.227***	-0.231***	0.080***
	(0.012)	(0.012)	(0.022)
Region: South	0.029*	0.023	0.134***
	(0.017)	(0.017)	(0.034)
Region: Central	-0.026*	-0.033**	0.148***
	(0.014)	(0.014)	(0.027)
Region: North	0.055***	0.054***	0.011
	(0.017)	(0.017)	(0.031)
Region: East	-0.102***	-0.109***	0.151***
	(0.027)	(0.027)	(0.053)
Year	0.012	0.014	-0.045**
	(0.010)	(0.010)	(0.020)
Husband: own experience of violence			0.543***
			(0.029)
Mother's experience of IPV			0.367***
			(0.025)
Constant	-0.161**	-0.157**	-0.327**
	(0.069)	(0.069)	(0.134)
Observations	12971	12971	12971
F-stat (KP)		341.91	
Hansen J stat (p-value)		0.01 (0.91)	
Endo test (p-value)		6.17 (0.01)	

Note: We report the Kleibergen-Paap (KP) F statistic for weak identification, as we are using robust standard errors. Hansen J stat is the test statistics from the over-identification test, where the null hypothesis is 'all instruments are valid'. Endo test is the test for the endogeneity of the IPV, where the null hypothesis is 'variable can be treated as exogenous'. Robust standard errors in parentheses. * p<0.1, ** p<0.05, *** p<0.01

Table 5: Estimated coefficients from 2SLS, for different kinds of violence. Dependent variable: LFP.

	(1)	(3)	(5)
Psychological violence	0.064***		
	(0.017)		
Physical violence		0.071***	
		(0.019)	
Sexual violence			0.100***
			(0.027)
Full set of controls	YES	YES	YES
Obs	12971	12971	12971
F-stat (KP)	332.16	250.38	97.72
Hansen J stat (p-value)	0.00 (0.95)	0.01 (0.91)	0.10 (0.75)
Endo test (p-value)	7.64 (0.01)	8.54 (0.00)	8.63 (0.00)

Note: All other covariates, see Table 4, are included in the model. Robust standard errors in parentheses. * p<0.1, ** p<0.05, *** p<0.01

Table 6: Estimated coefficients from LPM and 2SLS. The dependent variable, LFP by types of employment.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	LPM	2SLS	First stage	LPM	2SLS	First stage	LPM	2SLS	First stage
	Wage workers		IPV	Self-employed		IPV	Unpaid family workers		IPV
IPV	0.020***	0.036**		0.015***	0.056***		0.006*	0.019*	
	(0.005)	(0.016)		(0.005)	(0.015)		(0.004)	(0.011)	
Husband: own experience of violence			0.539***			0.545***			0.529***
			(0.033)			(0.033)			(0.033)
Mother's experience of IPV			0.360***			0.365***			0.381***
			(0.029)			(0.029)			(0.029)
Full set of controls	YES	YES	YES	YES	YES	YES	YES	YES	YES
Obs	9,716	9,716	9,716	9,422	9,422	9,422	9,470	9,470	9,470
F-stat (KP)		253.90			257.25			256.96	
Hansen J stat		0.00			0.23			3.05	
p-value		0.98			0.63			0.08	
Endo test		1.17			8.44			1.37	
p-value		0.28			0.00			0.24	

Notes: We report the Kleibergen-Paap (KP) F statistic for weak identification, as we are using robust standard errors. Hansen J stat is the test statistics from the over-identification test, where the null hypothesis is 'all instruments are valid'. Endo test is the test for the endogeneity of the IPV, where the null hypothesis is 'variable can be treated as exogenous'. All other covariates, see Table 4, are included in the model. Robust standard errors in parentheses. * p<0.1, ** p<0.05, *** p<0.01

Table 7: Dependent variable: income control. Reported coefficients are odds ratios.

	(1)	(2)
	Income control (Ordered logit specification)	
IPV ever	1.215***	1.143***
	(0.050)	(0.057)
Controls	NO	YES
Obs	2667	2667

Notes: Robust standard errors in parentheses. * p < 0.10, ** p < 0.05, *** p < 0.01. The full set of controls are as those used in Table 4. Income control is a categorical variable with three categories: 0 if woman has full control, 1 if husband has some control, and 2 husband has full control.

Table 8: Coefficients from LPM and 2SLS. Dependent variable: LFP

	(1)	(2)
	LPM	2SLS
IPV	0.031***	0.102***
	(0.006)	(0.024)
Mental health	-0.006	-0.024***
	(0.005)	(0.009)
IPV * Mental health	-0.010**	-0.056***
	(0.005)	(0.015)
Full set of controls	YES	YES
Obs	12971	12971
F-stat (KP)		97.75
Hansen J stat		0.27
p-value		0.87
Endo test		12.57
p-value		0.00

Notes: We report the Kleibergen-Paap (KP) F statistic for weak identification, as we are using robust standard errors. Hansen J stat is the test statistics from the over-identification test, where the null hypothesis is 'all instruments are valid'. Endo test is the test for the endogeneity of the IPV, where the null hypothesis is 'variable can be treated as exogenous'. All other covariates, see Table 4, are included in the model. Robust standard errors in parentheses. * p<0.1, ** p<0.05, *** p<0.01

Appendix A

Intimate Partner Violence Index

The intimate partner violence index that we use, and as is used in the literature, is a composite index, where information across a number of indicators (questions) is combined to get an aggregate measure. There are numerous known statistical and methodological issues in creating such composite indices, we briefly discuss them below. Further, reporting of intimate partner violence suffers from measurement error, below we also discuss the potential consequences of this error.

Statistical issues: The statistical argument for combining different outcomes into one summary measure comes from Anderson (2008). If we were to test the relationship between IPV and LFP separately for each of the 13 questions from the three different domains (physical, psychological and sexual violence), we run into the problem of multiple inference. One solution to this problem, proposed by Anderson (2008), is to combine the information from multiple indicators into one index, which is what we do, as is also done in the literature on domestic violence. Another way to combine the information would be to create one binary variable indicating the incidence of IPV, which is also used in the literature, and we use this approach as a robustness check.

Methodological issues: Apart from statistical concerns, there are also methodological concerns in creating composite indices. The methodological issues usually relate to the weighting of the different components and how these are aggregated. There is a growing literature addressing these points, mainly in the area of multi-dimensional poverty and well-being indices; see OECD (2008), Decancq and Lugo (2013), and Dutta et al. (2021). In creating an overall aggregate intimate partner violence index, we have assumed that physical, sexual, and psychological violence (and each question within each type of violence) get equal weight. This is the standard approach in the literature on composite indices using the counting approach (Alkire and Foster, 2011), and is often justified on the bases of simplicity and objectivity (Greco et al., 2019).

Measurement error: Intimate partner violence is often underreported, hence measured with an error. In the presence of measurement error in the main explanatory variable of interest the

estimated coefficients (λ_{LPM} in equation (1) in the main paper) is likely to be biased. Consider, $IPV_i^* = IPV_i + u_i$, where IPV_i^* is the true value of IPV for individual i, IPV_i is the value of IPV that we observe for individual i, and u_i is the additive measurement error. Let's assume a classical measurement error, i.e. measurement error has mean zero, $E(u_i) = 0$, is uncorrelated with the true value of IPV, $Cov(IPV_i^*, u_i) = 0$, and it is uncorrelated with the error term in the main equation (Equation (1) in the main paper), $Cov(\varepsilon_{0i}, u_i)$. Under the assumptions of the classical masurement error we know that the estimate of λ_{LPM} will suffer from attenuation bias, so the estimated coefficient can be considered as lower bound of the estimate.

However, in the case of IPV the classical measurement error assumptions are unlikely to hold. Whenever the true value of IPV is zero, it is most likely that the observed value is also zero, error is most likely to occur when the true value of IPV is different from zero. In this case the assumptions of the classical measurement error will not hold, as $Cov(IPV_i^*, u_i) \neq 0$. For the non-classical measurement error, the size and direction of the bias in the estimated coefficient will depend on what the covariance between the true value of IPV and the measurement error is, and how big the measurement error is.

Black et al. (2020) establish that if we assume the correlation between true value of the explanatory variable and the measurement error to be negative, $Cov(IPV_i^*, u_i) < 0$, and if we have two valid instruments for the explanatory variable (even if the instruments are themselves measured noisily) then the true parameter will be bounded between the OLS and the 2SLS estimate. Drawing on their results, we can infer that in our case the true estimate for the relationship between IPV and female LFP is between the LPM and 2SLS coefficient.

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Appendix B

Table A1: Reduced form check using LPM. Dependent variable: LFP.

	(1)	(2)	(3)
Husband: own experience of violence	0.038***		0.033***
	(0.012)		(0.012)
Mother's experience of IPV		0.030***	0.024**
		(0.011)	(0.011)
Age	0.047***	0.047***	0.047***
	(0.004)	(0.004)	(0.004)
Age squared	-0.001***	-0.001***	-0.001***
	(0.000)	(0.000)	(0.000)
High education	0.193***	0.193***	0.193***
	(0.015)	(0.015)	(0.015)
Husband: employer or self-employed	0.062***	0.061***	0.061***
	(0.016)	(0.016)	(0.016)
Husband: wage worker	0.041***	0.040**	0.040***
	(0.016)	(0.016)	(0.016)
Husband: unpaid family worker	0.298***	0.295***	0.297***
	(0.037)	(0.037)	(0.036)
Husband: high education	0.002	0.000	0.002
	(0.012)	(0.012)	(0.012)
Husband: alcohol consumption	0.059***	0.062***	0.057***
	(0.018)	(0.018)	(0.018)
Number of children age<=5	-0.103***	-0.103***	-0.103***
	(0.007)	(0.007)	(0.007)
Number of children ages 6-15	-0.028***	-0.028***	-0.028***
	(0.006)	(0.006)	(0.006)
Household size	-0.012***	-0.012***	-0.012***
	(0.003)	(0.003)	(0.003)
Asset index	-0.010***	-0.010***	-0.010***
	(0.002)	(0.002)	(0.002)
Social norms	0.007	0.005	0.006
	(0.010)	(0.010)	(0.010)
Urban area	-0.226***	-0.225***	-0.226***
	(0.012)	(0.012)	(0.012)
Region: South	0.031*	0.032*	0.031*
	(0.017)	(0.017)	(0.017)
Region: Central	-0.024*	-0.023*	-0.025*
	(0.014)	(0.014)	(0.014)
Region: North	0.055***	0.057***	0.055***
	(0.017)	(0.017)	(0.017)
Region: East	-0.100***	-0.097***	-0.100***
	(0.027)	(0.027)	(0.027)
Year	0.012	0.010	0.011
	(0.010)	(0.010)	(0.010)
Constant	-0.171**	-0.173**	-0.177**
	(0.069)	(0.069)	(0.069)
N	12971	12971	12971

Robust standard errors in parentheses. * p<0.1, ** p<0.05, *** p<0.01

Table A2: Estimated coefficients from the 2SLS, using one instrument at a time.

	(1) 2SLS LFP	(2) First Stage IPV	(3) 2SLS LFP	(4) First Stage IPV
IPV ever	0.061***		0.064***	
	(0.020)		(0.024)	
Age	0.046***	0.007	0.046***	0.008
	(0.004)	(0.007)	(0.004)	(0.008)
Age squared	-0.001***	-0.000	-0.001***	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)
High education	0.200***	-0.111***	0.200***	-0.109***
	(0.015)	(0.028)	(0.015)	(0.028)
Husband: employer or self-employed	0.067***	-0.081**	0.068***	-0.107***
	(0.016)	(0.039)	(0.016)	(0.040)
Husband: wage worker	0.051***	-0.153***	0.051***	-0.171***
	(0.016)	(0.038)	(0.016)	(0.039)
Husband: unpaid family worker	0.302***	-0.070	0.303***	-0.125*
	(0.037)	(0.075)	(0.037)	(0.075)
Husband: high education	0.006	-0.063***	0.006	-0.088***
	(0.012)	(0.024)	(0.012)	(0.024)
Husband: alcohol consumption	0.017	0.688***	0.015	0.735***
	(0.024)	(0.049)	(0.026)	(0.051)
Number of children age<=5	-0.102***	-0.013	-0.102***	-0.016
	(0.008)	(0.016)	(0.008)	(0.016)
Number of children ages 6-15	-0.030***	0.026**	-0.030***	0.028**
	(0.006)	(0.012)	(0.006)	(0.012)
Household size	-0.013***	0.015**	-0.013***	0.011*
	(0.003)	(0.006)	(0.003)	(0.006)
Asset index	-0.009***	-0.027***	-0.009***	-0.023***
	(0.002)	(0.005)	(0.002)	(0.005)
Social norms	0.006	0.015	0.006	-0.014
	(0.010)	(0.020)	(0.010)	(0.021)
Urban area	-0.231***	0.079***	-0.231***	0.089***
	(0.012)	(0.023)	(0.012)	(0.023)
Region: South	0.023	0.140***	0.022	0.159***
	(0.017)	(0.034)	(0.017)	(0.035)
Region: Central	-0.034**	0.156***	-0.034**	0.179***
	(0.014)	(0.028)	(0.015)	(0.028)
Region: North	0.054***	0.002	0.054***	0.035
	(0.017)	(0.031)	(0.017)	(0.031)
Region: East	-0.109***	0.144***	-0.109***	0.194***
	(0.028)	(0.054)	(0.028)	(0.055)
Year	0.014	-0.036*	0.014	-0.054***
	(0.010)	(0.020)	(0.010)	(0.020)
Husband: own experience of violence		0.618***		
		(0.029)		
Mother's experience of IPV				0.465***
				(0.026)
_cons	-0.157**	-0.224*	-0.135*	-0.245*
	(0.069)	(0.133)	(0.070)	(0.138)
Obs	12971	12971	12971	12971
F-stat (KP)	458.14		331.28	
	4.06 (0.04)		3.05 (0.08)	

Table A3: Estimated coefficients from LPM and 2SLS. Dependent variable: LFP. IPV measured as a binary indicator.

	(1) LPM LFP	(2) 2SLS LFP	(3) First stage IPV ever
IPV-binary ever	0.028***	0.136***	
	(0.010)	(0.037)	
Age	0.046***	0.045***	0.011***
	(0.004)	(0.004)	(0.004)
Age squared	-0.001***	-0.001***	-0.000*
	(0.000)	(0.000)	(0.000)
High education	0.196***	0.203***	-0.075***
	(0.015)	(0.015)	(0.015)
Husband: employer or self-employed	0.062***	0.062***	-0.007
	(0.016)	(0.016)	(0.017)
Husband: wage worker	0.042***	0.047***	-0.050***
	(0.016)	(0.016)	(0.016)
Husband: unpaid family worker	0.295***	0.295***	0.010
	(0.037)	(0.037)	(0.039)
Husband: high education	0.002	0.007	-0.043***
	(0.012)	(0.012)	(0.013)
Husband: alcohol consumption	0.057***	0.030	0.200***
	(0.019)	(0.021)	(0.017)
Number of children age<=5	-0.103***	-0.106***	0.019**
	(0.008)	(0.008)	(0.008)
Number of children ages 6-15	-0.028***	-0.030***	0.011*
	(0.006)	(0.006)	(0.006)
Household size	-0.012***	-0.012***	0.002
	(0.003)	(0.003)	(0.003)
Asset index	-0.010***	-0.009***	-0.008***
	(0.002)	(0.002)	(0.002)
Social norms	0.006	0.007	-0.005
	(0.010)	(0.010)	(0.011)
Urban area	-0.226***	-0.229***	0.024**
	(0.012)	(0.012)	(0.012)
Region: South	0.032*	0.026	0.040**
	(0.017)	(0.017)	(0.017)
Region: Central	-0.024*	-0.035**	0.077***
	(0.014)	(0.014)	(0.014)
Region: North	0.056***	0.053***	0.014
	(0.017)	(0.017)	(0.016)
Region: East	-0.100***	-0.109***	0.071**
	(0.027)	(0.028)	(0.028)
Year	0.012	0.015	-0.028***
	(0.010)	(0.010)	(0.010)
Husband: own experience of violence			0.216***
			(0.012)
Mother's experience of IPV			0.197***
			(0.012)
_cons	-0.172**	-0.206***	0.207***
	(0.069)	(0.070)	(0.076)
Obs	12971	12971	12971
F-stat (KP)		394.81	
Hansen J stat (p-value)		0.11 (0.74)	
Endo test (p-value)		9.34 (0.00)	

Robust standard errors in parentheses. * p<0.1, ** p<0.05, *** p<0.01

Table A4: Estimated coefficients from probit and IV-probit. Dependent variable: LFP.

	(1) Probit LFP	(2) IV-Probit (second stage) LFP	(3) IV-Probit (first stage) IPV-ever
Continuous IPV - ever	0.068***	0.185***	
	(0.015)	(0.039)	
Age	0.139***	0.137***	0.008
	(0.012)	(0.010)	(0.006)
Age squared	-0.002***	-0.002***	-0.000
	(0.000)	(0.000)	(0.000)
High education	0.556***	0.565***	-0.112***
	(0.042)	(0.034)	(0.023)
Husband: employer or self-employed	0.184***	0.194***	-0.094***
	(0.049)	(0.042)	(0.028)
Husband: wage worker	0.134***	0.152***	-0.167***
	(0.047)	(0.040)	(0.026)
Husband: unpaid family worker	0.876***	0.883***	-0.087
	(0.122)	(0.107)	(0.068)
Husband: high education	0.007	0.017	-0.066***
	(0.035)	(0.030)	(0.019)
Husband: alcohol consumption	0.124**	0.032	0.666***
	(0.052)	(0.052)	(0.029)
Number of children age<=5	-0.322***	-0.320***	-0.017
	(0.026)	(0.021)	(0.013)
Number of children ages 6-15	-0.081***	-0.084***	0.024**
	(0.017)	(0.015)	(0.010)
Household size	-0.038***	-0.040***	0.014***
	(0.009)	(0.008)	(0.005)
Asset index	-0.028***	-0.025***	-0.025***
	(0.006)	(0.005)	(0.004)
Social norms	0.013	0.014	0.010
	(0.030)	(0.032)	(0.021)
Urban area	-0.642***	-0.649***	0.080***
	(0.033)	(0.031)	(0.021)
Region: South	0.083*	0.063	0.134***
	(0.048)	(0.041)	(0.027)
Region: Central	-0.073*	-0.095***	0.148***
	(0.040)	(0.034)	(0.022)
Region: North	0.153***	0.149***	0.011
	(0.046)	(0.051)	(0.035)
Region: East	-0.307***	-0.327***	0.151***
	(0.080)	(0.085)	(0.057)
Year	0.037	0.043*	-0.045***
	(0.030)	(0.025)	(0.017)
Husband: own experience of violence			0.543***
			(0.019)
Mother's experience of IPV			0.367***
			(0.018)
Constant	-1.973***	-1.951***	-0.327***
	(0.218)	(0.175)	(0.113)
N	12971	12971	
Correlation between the error terms			-0.117***
			(0.037)
Wald test for exogeneity (p-value)			10.12 (0.002)

Robust standard errors in parentheses. * p<0.1, ** p<0.05, *** p<0.01

Figure A1. CDF for the continuous measure of IPV, for different values of the instrument *husband experienced violence*.

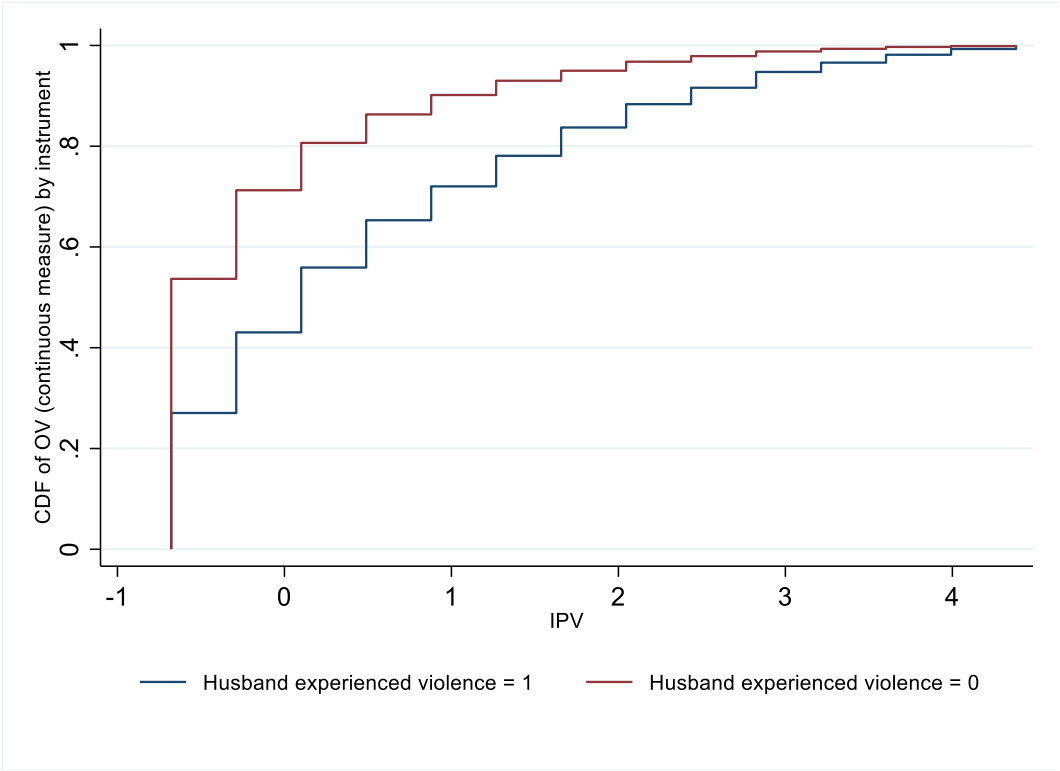

Figure A2. CDF for the continuous measure of IPV, for different values of the instrument *mother experienced IPV*.