

# Employment of Women and Domestic Violence: Empirical Evidences from Cambodia

Buntheourn Sen\* Udomsak Seenprachawong\*\*

## Abstract

Domestic violence is widespread around the world. The policy program that economically empower for women, specifically enhancing women in labor force market, have become popular policy options in order to improve gender equality. However, the relationship between improving women earning and household conflict are mixed. This paper aims to study the effect of women earning outside home on domestic violence by using national representative data from Cambodia Demographic Health Survey (CDHS) in 2014. By using two-stage least square method to control for the endogeneity issue, the result found that the effect of women's employment on domestic violence is inconclusive where the previous methodology result found strongly negative effect on household conflict.

**Keywords:** Employment of Women, Domestic Violence, Cambodia

---

\* Graduate Student, Graduated School of Development Economics, National Institute of Development Administration Serithai Road, Klong-Chan, Bangkok, Bangkok 10240, Thailand - E-mail: bunthoeurnsen@yahoo.com

\*\* Associate Professor of Economics, Graduate School of Development Economics, National Institute of Development Administration Serithai Road, Klong-Chan, Bangkok, Bangkok 10240, Thailand – E-mail: sudomsak@yahoo.com

# การจ้างงานสตรีและความรุนแรงในครัวเรือน : กรณีศึกษาประเทศกัมพูชา

บุนเทิน เซน\* อุดมศักดิ์ ศीलประชาวังค์\*\*

## บทคัดย่อ

ปัญหาความรุนแรงในครอบครัวเป็นปัญหาที่เกิดขึ้นทั่วทุกมุมโลก ซึ่งนโยบายที่ช่วยส่งเสริมสนับสนุนให้ผู้หญิงมีอำนาจทางเศรษฐกิจโดยเฉพาะการผลักดันให้ผู้หญิงเข้าสู่ตลาดแรงงานได้นั้นกลายเป็นนโยบายที่เป็นที่นิยมเพื่อที่จะแก้ไขปัญหาความไม่เท่าเทียมกันทางเพศ ในงานวิจัยนี้มีวัตถุประสงค์เพื่อศึกษาผลกระทบของการมีรายได้ของผู้หญิงจากการทำงานนอกบ้านกับปัญหาความรุนแรงในครัวเรือน โดยใช้ข้อมูลการสำรวจประชากรและสุขภาพของประเทศกัมพูชาในปี พ.ศ. 2557 (Cambodia Demographic Health Survey) จากการประมาณการในแบบจำลองพบว่า ผลกระทบจากสถานภาพการจ้างงานของผู้หญิงต่อความรุนแรงในครอบครัวนั้นไม่สามารถสรุปได้ว่ามีความสัมพันธ์ใดๆ ต่อกัน ซึ่งขัดแย้งกับผลการวิจัยโดยใช้เครื่องมือก่อนหน้านี้พบว่า สถานภาพการจ้างงานของผู้หญิงนั้นมีความสัมพันธ์เชิงลบต่อความขัดแย้งในครอบครัว

**คำสำคัญ:** การจ้างงานสตรี, ความรุนแรงในครัวเรือน, กัมพูชา

\* นักศึกษาปริญญาโท หลักสูตรเศรษฐศาสตร์มหาบัณฑิต คณะพัฒนาการเศรษฐกิจ สถาบันบัณฑิตพัฒนบริหารศาสตร์ ถนนเสรีไทย แขวงคลองจั่น เขตบางกะปิ กทม 10240 - Email: bunthoeurnsen@yahoo.com

\*\* รองศาสตราจารย์ คณะพัฒนาการเศรษฐกิจ สถาบันบัณฑิตพัฒนบริหารศาสตร์ ถนนเสรีไทย แขวงคลองจั่น เขตบางกะปิ กทม. 10240 - Email: sudomsak@yahoo.com

## 1. Introduction

It had been believed that a countries economic development is measured by income and the policies implemented by the economists had been focused on eliminating the poverty and advancing the share of prosperity. However, this measurement has been criticized by many scholars, for instance, Amartya Sen, a well-known welfare economist and the author of the book of development as freedom. He advocates that development is not only about the expansion of income but also the freedom for all people, particularly, women in which they could be presented in the new opportunities, voice, protection, and labor force participation as well as education attainment. Missing women in the development agenda and gender inequality in which they are discriminated has been significantly impinging on economic growth (Klasen & Lamanna, 2009; Sen, 1999).

Women's accessibility to the labor market is commonly believed as pathway to improve their lives. For this reason, the policy maker has focused on facilitating for women, for instance, the fifth goal of the Sustainable Development Goal (SDGs) is to narrow the gender gap and empowering all women and girls. Indeed, there are a bunch of empirical support for women's employment and economic growth. For instance, Cavalcanti and Tavares, (2007) found that women's access to the labor force has a negative impact on early marriage and childbearing. Women who are employed can also increase their bargaining power within the family in which women are able to invest more on her children's health and education as well as increase capability in saving and credit repayment (Sen, 1987; Stotsky, 2006). Because women play an important role on processing economic development, therefore, women should be treated equally to men and be protected. Domestic violence is defined as the violence in the family in which the husband is a perpetrator of violence on his wife, and is commonly a phenomenon around the world in both developed and developing countries. It is a major violation of international law on human rights, and also a substantial amount of public health expenditure with sizable economic and social costs (Duvvury et al., 2013). Women that experienced domestic abused suffer extreme depression or anxiety in both physical and psychological abuse. They may become isolated, deteriorated in labor productivity and have loss of income. Family violence also is a significant impact on children's development health and education (Rawlings & Siddique, 2014). According to the report of the World Health Organization in 2013, one third of the women in the world are affected by domestic violence committed by their husband or partner.

History of Cambodia's chronicles during its civil war inherits a country with a culture of violence particularly under the Khmer Rouge regime. Nowadays Cambodian people are still being affected by this violence especially women who are the most vulnerable and are affected in the form of domestic violence. The issue of domestic violence is becoming more serious in Cambodia. Although Cambodia has recognized the issue of violence against women and many policies were implemented to eliminate this violence such as drafting laws against domestic violence in 1992 and the Millennium Development Goal in 2000, the rate of criminal activity against women in Cambodia remains high. According the Demographic and Health Survey in the year 2000, more than one fifth of women who ever married has witnessed spousal violence since age 15 and over 15 percent of women have faced violence in the year before the survey (National Institute of Statistics, Directorate General for Health [Cambodia], and ORC Macro, Cambodia Demographic Health Survey 2000, 2001).

Table 1 shows the summary data of Cambodia domestic violence from the year 2000 to 2014. From year 2000 to 2005, the rate of domestic violence has not decreased much with only 3 percent for any kind of violence (See Table 1: column 5). This means that the policies of the government have not significantly affected it. However, it might be because of its initial data collection was biased as it is not customary for women in Cambodia to report their household violence.

By 2005, Cambodia law of preventing women and victims from violence has been looked at as well as The First National Action Plan to Prevent Violence against Women in 2009-2012 was approved. Yet, the percentage of women that are being abused by their own partners has seemingly not dropped in all kinds of violence. Instead, the physical violence has increased by 3 percent approximately (see table 1). In addition, according to the report of Cambodia Demographic and Health Survey (CDHS) in 2014 stated that domestic abuse had become more hazardous in which among those with sexual or physical violence, one in two women were reporting that they were injured.

There are few studies on domestic violence in the context of Cambodia. Instead, the research on the causality effect between women's participation in the labor market and domestic violence has not been studied yet. According to theory and empirical literature, the prediction of women's employment effects on domestic violence is mixed. Household bargaining model predicts that women with lower economic resources are more likely to be abused by their husband or partner (Farmer & Tiefenthaler, 1997; Lundberg & Pollak, 1994; McElroy, 1990; Tauchen, Witte, & Long,

1991). In contrast, Macmillan and Gartner (1999) found that women are more likely being abused if her status is higher than her partner. This is happening in the patriarchal society where the male has the highest role in the family and he would use violence to take his authority back if he felt that his role is harmed. Similarly, males might use violence as an instrument to extract the monetary benefits from his wife when she became more financially independent (Bloch & Rao, 2002).

**Table 1: Summary data of Cambodia domestic violence**

Survey	Sexual violence	Emotional violence	Physical violence	Sexual or emotional or Physical violence
CDHS 2000	4percent	17.8percent	16percent	25percent
CDHS 2005	3percent	18.5percent	13.7percent	22.3percent
CDHS 2014	6percent	24.8percent	16.2percent	28percent

Source: Cambodia Demographic and Health Survey

In another context, domestic violence might affect the women's employment status to desire to work or not as the outcome of spousal violence. In this case women who report that they have experienced domestic violence might become less productive as her normal activities were interrupted by the perpetrator (Canavire-bacarreza & Avila, 2010; Tolman & Wang, 2005). In contrast, domestic violence might induce women to go out for jobs in the sense that she might need to stay far from her abusive husband (Bhattacharya, 2015).

Because there is a causality between women employment status and domestic violence, the potential of endogeneity issue must be addressed. In this study, firstly, the estimation methodology is based on ordinary least square (OLS) and binary probit model, without taking account for the issue of endogeneity. Next, using the variable of women currently breast-feeding as an instrumental variable for women's employment status, the Hausman test for endogeneity confirms that these two variables are endogenous variables. It means that the result in previous methodology is biased and inconsistent. To grab this issue, the two stage least square estimation is used. The estimation with unbiased and consistency of instrumental variable found differ from the OLS and binary probit result.

## 2. Literature review

Existing research on domestic violence, in terms of economic ideology, is mostly grounded on the household bargaining model. For instance, Farmer and Tiefenthaler (1997), use a non-cooperative bargaining model to analyze the impact of women empowerment on domestic violence. The daily consumption of women, in this model, is assumed that she is depending on her partner for support. The level of violence is based on the monetary transfer from men to women as men might use this financial support to buy her with violence. The women who are empowered, whether by her own earning income or any funds supported from outside the marriage, spousal violence will be decreased. Tauchen, Witte, and Long (1991) developed Nash-bargaining model that explain the effect of income change on domestic violence. In their model, both partners have a level of the threat-point which is the minimum level of welfare that each spouse should provide to each other in the relationship. Given a specific amount of financial transfers from her partner, the level of threat-point of women determines the level of violence that is acceptable for her to maintain the relationship intact. The model predicts that the level of violence will be increased when men's income increases as he can transfer more money to his wife. However, the level of violence will be decreased when women's income increases as her level of her thread-point increase which constrains the male's violent behavior.

Although the game theoretical model suggests that there is unambiguous of the negative effect of women employment on the risk of household violence, the empirical research on this relationship of these two variables is unclear. Aizer (2010) examines the effect of the wage inequality between men and women on violence in the case of the United States. The result shows that when the relative wage of women and men is narrowing, the rate of intimate partner violence against women deteriorates. Similarly, Dugan, Nagin, & Rosenfeld (1999) found that when both spouses are employed, their time that they spent together reduced the risk of violence, causing it to decline. Chin (2011) provides the empirical result that support to the household bargaining model in the case of India in which the result found that increasing women's employment is significantly reducing the incidence of family violence.

In contrast, women empowerment may induce the incidence of household violence in the patriarchal society. The patriarchy; where men are prominent in the relationship, men authorize over women and children as well as household property (Macmillan & Gartner, 1999). The cultural norm where it prescribes that the male is dominant and female dependence is challenged when women become higher role in the family as her empowerment increased through her employment. The male might inflict violence to restore his authority over his wife when he feels

that his status is less predominant. The prediction of this patriarchal society is criticized as it ignores the rationality response to the violence of women. She may end her relationship with her abusive husband as her bargaining power is increased (Aizer, 2010). However, in the society where divorce is costly for women, divorce is not credible for her except in an extreme case of violence. For instance, women might have disapproved or been discriminated against by society (Luke & Munshi, 2011; Srinivasan & Bedi, 2007). In this case, the empirical evidence, women with higher financial independence, income or credit group membership, are much more likely a higher risk of domestic violence (Koenig, M, Ahmed, Hossain, M, & Khorshed, A, 2003; Luke & Munshi, 2011).

Similarly, but in another context, violence against women may increase, as the result of her financial resources increase. In this case, men may use violence as an instrument to extract a monetary benefit from the women. In India, Bloch and Rao (2002) provides the empirical evidence on the extractive effect. The study found that women from rich households have higher risk of domestic violence than women from poor households, as less extraction in the lower household resources. In addition, it is possible that working women would face more violence than non-working women do, because the male partner may become more aware as his wife goes to work outside the home as she would have contact with other men. Eswaran and Malhotra (2011) found the evidence from India that the women who work for family or self-employed have less probability of domestic violence when compared to women who work for others.

Heath (2014 ) estimate the relationship between female labor force participation and domestic violence in the case of Bangladesh. The empirical result of this developing country where most of the women work in garment factory found that there is positive correlation between women's employment and domestic violence which is opposite with the incorporative bargaining model. However, this result is confirmed only in the case of women with initially low status. By using the interactive term between women's education and work as well as income, this study found that the incidence of violence tends to increase for women who work in garment industry with low education and income.

Most of the studies on domestic violence and women's employment ignore the problem of endogeneity (Macmillan & Gartner, 1999; Farmer & Tiefenthaler, 1997). There might be unobservable variable that are correlated with both the economic status of women and domestic violence due to the women's employment is endogenous variable in which it is the choice that is made by a woman or the household as the result of abuse. There are only recently empirical studies that account for the issue of endogeneity between women's employment and domestic

violence, they are from India Alonso-Borrego & Carrasco (2017) and Chin (2012) in Spain and India respectively. Removing the suffer from endogeneity, both use difference technique, Alonso-Borrego & Carrasco (2017) employ the multivariate probit model while Chin (2012) use Two Stage Least Square. However, these empirical results in both cases are the same in which they found that increased employment opportunities to women significantly reduce the incidence of domestic violence. However, the result of Alonso-Borrego & Carrasco (2017) further found that there is no evidence support for the negative effect of women's employment on the risk of domestic violence when she is employed alone in her family. It is significant only when both spouses are employed and domestic violence is become more likely to happen when there is only the husband working in the family. Similarly, Bhattacharyya, Bedi and Chhachhi (2009) found that women employment has a strongly negative effect on the household violence from North Indian village, when controlling for endogeneity problem. In contrast, another study of Lenze and Klasen (2017) found that there is no link between women working in labor market and physical violence or emotional violence, after controlling the endogeneity issue.

### 3. Data and Empirical Models

This study draws from the latest data series of Cambodia Demographic and Health Survey (CDHS) in 2014. This cross-sectional data is divided into a four groups questionnaire; household, men, women and micronutrient questionnaire. These questionnaires are based on the worldwide Demographic and Health Survey (DHS). CDHS 2014 is nationally representative data in which the sample was selected from 19 out of 24 provinces and cities of Cambodia. This survey is specifically on women whose ages range from 15 to 49-years-old. It is also included the module of crucial used for this analysis such as domestic violence. The sample size of women's response on domestic violence is 4,307. However, there are only 2,723 of women that have full information on the variable of domestic violence for the model of determinants of domestic violence.

In term of descriptive analysis, violence is measured by asking among women who ever married whether she ever experienced any violent act from her husband/ partner or not (see appendix for variable definition). It is assigned as 1 if she response yes and 0 if she answers no.



According to the table 2, among all kinds of violence in Cambodia, the incidence of emotional violence is highest compare to other kinds of violence with 18.9 percent of women who reported that they ever experienced with this kind of abused by her husband. Less severe violence is the second highest of the prevalence of violence in Cambodia which is 11.1 percent of women who has been reported as a victim of violence. The incident of severe violence and sexual violence is not much difference with only 4.7 percent and 3.7 percent, respectively. However, the data of sexual violence might be imprecise with lower estimation as Cambodia culture is not familiarly open with this problem (National Institute of Statistics, Directorate General for Health, & ICF Internationa, 2015). Overall, the rate of violence in any kind is 22.2 percent in which women in Cambodia reported that they were being abused whether in form of sexual violence, physical violence, or emotional violence. Violence index is another variable that constructed by the average of all kind of violence.

**Table 2: Summary of Domestic Violence as Dependent Variables**

Variable	Mean	Std. Dev.
Severe violence	0.047	0.211
Less severe violence	0.111	0.344
Sexual violence	0.037	0.189
Emotional violence	0.189	0.391
Any violence	0.222	0.416
Violence index	0.096	0.209

Source: Authors' Calculation based on CDHS, 2014

Table 3 shows the prevalence of domestic violence by the employment status. The women who join the labor market is defined as working outside home, income in cash, and whole year working. It is assigned as 1 for women who join the labor market and 0 for women who working as domestic work or self-employed. The variation of violence by status of women working is not much difference except the emotional violence which is only 15.91percent of total women who join the labor market compare with 21.42percent of women who do not join the labor market. In aggregate of domestic violence, the women who do not participate in the labor market are more likely being abused as its rate of violence is higher than women who participate in the labor market.

**Table 3: Prevalence of Domestic Violence by Employment of Women (Percent)**

Violence Status	Women employed =1	Otherwise = 0
Severe violence	4.51	5.46
Less severe violence	11.63	13.03
Emotional violence	15.91	21.42
Sexual violence	3.33	4.19
Any violence	19.00	25.20

Source: Authors' Calculation based on CDHS, 2014

The model of Domestic violence can be built as:

$$DV = \beta_0 + \beta_1 Women's employment status + \beta_i X_i + \varepsilon_i \quad (1)$$

Where the dependent variable,  $DV$ , is the domestic violence. Dependence variable is violence index for the case of 2SLS and OLS. However, domestic violence in this equation (1) can be dummy variable of domestic violence which is analyzed by Binary Probit model. The key important is independent variable of women's employment status. This model also includes other control variables  $X_i$  which contain of wife's characteristics (age, education, age at marriage, her perceptions on domestic violence, and intergenerational violence), husband's characteristics (age, education, occupation, and alcohol consumption), household characteristic (wealth index, resident's rural, number of children, religion) and the regions. Because different provinces have different socio-economic characteristics, law of domestic violence may have differences applicable through poverty characteristic of each regions. The variable of region is constructed based on the report of Asian Development Bank (2014) on the community poverty rate of each province (see the appendix). The province that has similar percentage of community poverty was grouped in one region. It divided into 4 regions. The first region is Phnom Penh, the capital city which is the lowest rate of poverty and serves as the reference.

Because there are two types of dependent variable: discrete and continuous dependent variable, ordinary least square (OLS) and binary probit model are used to estimate. However, the key concerned here in this regression, women's employment status might be the endogenous independent variable. Thus, the method of ordinary least square (OLS) and binary probit model leads to bias and inconsistency estimation as a consequence of correlation between the error term  $\varepsilon_i$  and explanatory variable women's employment status. In this case, two stages least square (2SLS) can be used for tackling this problem.

The sources of endogeneity can be happened in three cases; measurement error, simultaneity and omitted variable (Wooldridge, 2015). In this model, simultaneous causality and omitted variable are the sources of endogeneity problem. For instance, women's working status, whether they work or not, might be affected by health concerned as a result of husband beating. The empirical study of the effect of domestic violence on her currently working status is a mismatch. One empirical evidence of the impact of family violence on women's working status in India by Bhattacharya (2015) found that working status of women who ever experienced husband beating are more likely being employed in the whole year, given control for endogeneity problem. In contrast, Canavire Bacarreza & Avila (2010), given control for endogeneity problem, for Bolivia case, found that women currently working are strongly and significantly affected negatively by domestic violence. Similarly, Farmer & Tiefendthaler (2004) found that domestic violence has a significant effect on women's employment in case of America. In addition, Tolman & Wang (2005) also found that spousal violence affected women's annual work hours in Michigan State.

An omitted variable that leads to endogenous for both women's employment status and family violence is social norm. For instance, women might traditionally believe that they should work only in domestic work. Domestic violence is an action that society accepted where men commit violence without any feelings of guilt. Thus, both variables may be determined by the omitted variable, traditionalism.

To account for the endogeneity issue, two stage least square methods are implemented. The first stage of this method is defined by:

$$\text{women employment status} = \Pi_0 + \Pi_1 Z_1 + \Pi_i X_i + v_i \quad (2)$$

This first stage is the regression between the women's employment and the instrumental variable  $Z_1$  and control variable  $X_i$ , which is overlapped in the equation (1). This first stage is estimated by using ordinary least square (OLS). The second stage estimate the interesting dependent variable of domestic violence on the instrumental variable of women's accessibility to labor market, and other exogenous variables same as the first stage. The reduced form of this equation can be written as:

$$DV = \beta_0 + \beta_1 \text{Women's employment status}^* + \beta_i X_i + \beta_1 v_i + \varepsilon_i \quad (3)$$

The procedure of two stage least square needs to find out the instrumental variable (IV)  $Z_1$  that appropriate for the endogenous variable women's employment status. The instrumental variable estimator must be fulfilled with two conditions. First, it must be highly correlated with the endogenous variable. Second, it must be uncorrelated with the error term. Under these two conditions, the estimation of IV will be unbiased and consistency (Wooldridge, 2015). Many previous literatures in the context of domestic violence and women's working status, the instrumental variable like the cluster average of women's working status, number of household members or type of family were used as an instrumental variable for women's employment status (Jana & Klasen, 2017; Bhattacharyya, Chhachhi, & Bedi, 2009). However, based on the data experimental testing, the validation of instrumental variable in case of Cambodia is women that are currently breast-feeding.

Base on Table 3 of the appendix, about 20 percent of total sample of women are currently breast-feeding. It may have strong correlation with women currently working outside home as she might need time to stay at home to take care of her newborn. The thing that we must consider is women who are experiencing domestic violence may be affected by the women currently breast-feeding which lead to model misspecification (Gujarati, 2014). However, in term of data validity testing, the result of testing found that the value of the F-statistics of jointly significance in the first stage is greater than the critical value. It shows that the null-hypothesis testing of week instrumental variable is rejected (see table: 5). Hence, the instrumental variable is fulfilled with data empirical testing.

#### 4. Estimations and Results

Table 4 presents the regression result of equation (1) by using ordinary least square and the marginal effect of probit model. The regressions estimate for the probability of the aggregate domestic violence in different kind of violence such violence index and any violence in the first two columns. Following the earlier sections of literature reviews, the influencing of women's working status on the incidence of domestic violence is the main point of discussion issue. For the other variables, the test of their validity of model specification have been done in the previously studies on domestic violence (Flake, 2005; Jejeebhoy, 1998; Panda & Agarwal, 2005; Rao, 1997).

The result of estimation in table 5 shows the effect of women who work in labor market on the aggregated domestic violence without considering the issue of endogeneity. Base on the OLS result from regression 1, on average, women who joint labor market has lower incident of being abused by 1.01 compare to women who do not working in labor market, given the other variables constant. However, the result does not have statistical significance. The second column which estimated by using the marginal effect of probit model, the coefficient of women's working status reports that the probability of women who work outside home being abused by her husband is less than women who working inside household, statistically significant at the 5 percent level, holding other variable unchanged. This result supports the models of household bargaining and other empirical studies in which increasing women bargaining power will negative impact on the level of household conflict (Alonso-Borrego & Carrasco, 2017; Tauchen, Witte, & Long, 1991; Jana & Klasen, 2017; Lundberg & Pollak, 1994).

For women's characteristics, the coefficient of women and husband age gap variable has negative sign in both regression 1 and 2, meaning that when the variable of age difference between spouses increases, the prevalent of household violence decrease. However, it is not statistically significant. Positive association on domestic violence but all of husband's age coefficients are insignificant in statistical meaning.

Based on the regression 1 and 2, for women, age at marriage seems to have positive relationship with family violence, however, there is no evidence to support this in term of statistical significance. In contrast, the intergenerational violence is a strongly positive significant on domestic violence and it is robust with all regressions. This means that in Cambodia, the behavior of violence continues to affect each new generation. The link of this may be the result of women perspective in domestic violence acceptable in the society (Hindin, Kishor, & Ansara, 2008). Wife and husband education are negatively statistically significant on domestic violence. Husbands whose education increases by one year can reduce the violence by 0.04percent, holding everything else constant (regression 1). Husband occupation in agriculture, however, seems to use less violence on his wife compare to men who work in other fields in both regressions and is significant at 5 percent significance level. For the variable of husband alcohol consumption, it is strongly positive on domestic violence with statistical significant. The men who drink alcohol are more likely to be violent than men who do not.

For household characteristics, number of children is a robust positive in the relationship to domestic violence, according both regression 1 and 2. Furthermore, households that believe in Buddhist religion tends to have higher incident of domestic violence than other religions. The coefficients of wealth index are negative and statistically significant while the households located in rural areas is less likely to have incidents of domestic violence compare to the urban. For the control variable of regions with higher poverty rate has positive correlation with domestic violence but less evidence supports in term of statistical significant.

To analyze in depth whether the significance of coefficients change across to the type of domestic violence, the regressions 3 to 6 in table 4 show the probability of women who ever experience domestic violence in various types of violence. Likewise, the result found in these regressions are similar to the aggregate domestic violence, regarding the sign and the magnitude of coefficients. For instance, the perception of women on domestic violence is positively significance effect on domestic violence, specifically emotional violence. However, there is lack of statistically significant of women joining labor market for all kinds of domestic violence. The coefficient of husband's agricultural occupation is negatively significance in the severe and less severe violence which is contrast with the overall regression in model 1 and 2. However, all results here have not accounted for the possibility of endogeneity issue of women's working status which lead the result to be biased and inconsistent. Thus, the result of two-stages least square is discuss in the next section.

Table 4: Result of OLS and Marginal Probit Model

Independent variable	(1)	(2)	(3)	(4)	(5)	(6)
	Violence index	Any violence	Severe violence	Less severe violence	emotional violence	sexual violence
Women's employed	-0.011 (0.263)	-0.039** (0.043)	0.008 (0.424)	-0.013 (0.433)	-0.028 (0.181)	-0.007 (0.409)
Spouse age difference	-0.001 (0.137)	-0.003 (0.110)	0.001 (0.076)	-0.002** (0.052)	-0.002 (0.260)	0.000 (0.983)
Women Education						
Primary Education	-0.034** (0.027)	-0.025 (0.280)	0.008 (0.113)	-0.051 (0.001)	0.014 (0.522)	-0.028** (0.001)
Secondary Education	-0.058*** (0.000)	-0.087*** (0.001)	0.008*** (0.000)	-0.073*** (0.000)	-0.054** (0.029)	-0.020** (0.013)
Higher Education	-0.037 (0.140)	-0.085 (0.100)	0.025 (0.920)	-0.080*** (0.000)	-0.059 (0.263)	0.016 (0.609)
Women perception on DV	0.019 (0.132)	0.057** (0.020)	0.009 (0.617)	0.013 (0.432)	0.054** (0.018)	0.000 (0.991)
Women age at marriage	-0.001 (0.485)	-0.002 (0.430)	0.001 (0.716)	-0.002 (0.208)	-0.002 (0.268)	0.000 (0.608)
Women violence background	0.085*** (0.000)	0.170*** (0.000)	0.012*** (0.000)	0.111*** (0.000)	0.141*** (0.000)	0.024** (0.021)
Husband years of schooling	-0.004*** (0.001)	-0.010*** (0.000)	0.001 (0.285)	-0.004** (0.013)	-0.008*** (0.001)	-0.002** (0.028)
Husband occupation: agriculture = 1	-0.022** (0.027)	-0.015 (0.426)	0.007** (0.010)	-0.033** (0.012)	-0.014 (0.440)	0.000 (0.975)
Husband Alcohol consumption	0.051*** (0.000)	0.102*** (0.000)	0.006*** (0.001)	0.053*** (0.000)	0.095*** (0.000)	0.020*** (0.001)
Religion Buddhist = 1	0.038** (0.030)	0.080*** (0.006)	0.012 (0.672)	0.042** (0.019)	0.064** (0.020)	0.017** (0.048)
Number of Children	0.016*** (0.000)	0.027*** (0.000)	0.002*** (0.000)	0.015*** (0.000)	0.020*** (0.000)	0.006*** (0.001)

Wealth index: Reference = Poorest						
Poor	-0.015 (0.291)	-0.001 (0.976)	0.007 (0.182)	-0.006 (0.702)	0.003 (0.879)	-0.009 (0.223)
Middle	-0.025 (0.080)	-0.017 (0.506)	0.007 (0.095)	-0.012 (0.465)	-0.016 (0.482)	-0.017** (0.011)
Rich	-0.023 (0.135)	0.000 (0.996)	0.007 (0.073)	-0.015 (0.362)	-0.001 (0.959)	-0.010 (0.223)
Richest	-0.045*** (0.006)	-0.025 (0.431)	0.008*** (0.000)	-0.049*** (0.007)	-0.022 (0.453)	-0.019** (0.045)
Rural	-0.012 (0.268)	-0.021 (0.416)	0.011 (0.397)	-0.030 (0.110)	-0.005 (0.814)	-0.010 (0.387)
Regions: Reference = Phnom Penh						
Province 1	0.023 (0.084)	0.040 (0.221)	0.023 (0.096)	0.003 (0.889)	0.053 (0.094)	0.004 (0.717)
Province 2	0.001 (0.940)	-0.004 (0.896)	0.015 (0.131)	-0.034 (0.074)	0.019 (0.498)	-0.006 (0.606)
Province 3	0.018 (0.211)	0.044 (0.217)	0.024 (0.202)	-0.004 (0.861)	0.047 (0.174)	-0.002 (0.841)

Note: \*\* = 0.05 significant level and \* = 0.01 significant level. P-value is shown in parenthesis.



To test for whether the endogeneity issue exists between domestic violence and women's working status, Durbin-Wu-Hausman is applied. As expected, the result is found that the null-hypothesis of exogenous variable is rejected in both model specifications (see the appendix for the result of Hausman test for exogenous variable). It implies that domestic violence and women's working status in labor market are endogenous variables. Thus, in this case, the result of econometric analysis by using two stages least square is applicable with unbiased and consistency. Table 5 shows the result of instrumental variable (IV) or two stage least square estimation. This table provides 2 model specifications. Women's perception on domestic violence is excluded in model 2 because this indicator is based on the attitudes towards domestic violence which may not consistence in data collection according to CDHS 2014. This table also includes the first stage result with the F-test of weak instrumental variable hypothesis.

The instrumental variable "currently breast-feeding" is expected to have an impact on women accessibility to labor market with statistical significant as well as it must be a strong instrumental variable but it is not affect to the domestic violence directly. Women who are currently breast-feeding, they may need some time off to take care of her infant, thus the effect to the labor market participation directly. At the bottom of table 5 shows the result of the first stage of the instrumental variable estimation. As the expected result, the instrumental variable currently breast-feeding is strongly negative significant at 1 percent statistical significance. The F-test of first stage of jointly significant hypothesis equal to 16, approximately, which is greater than the threshold of accepting the null-hypothesis of weak instrumental variable. Thus, the variable of currently breast-feeding is valid for instrumental use for the women's accessibility to labor market.

The result of second stage found that the coefficient of women who are employed in the labor market is positive. It means that the incident of household violence of women who work outside home is higher than women who work in domestic work. However, it is less statistical significance in both model specifications which contrast to the previous result. This result is inconsistency with the bargaining model (Farmer & Tiefenthaler, 1997; Lundberg & Pollak, 1994; McElroy, 1990). This result is similar to the study of Heath (2014) in the case of Bangladesh. According to Heath (2014), women who participate in labor force are more likely being abused than women who working at home when her initial bargaining is too low. In the context of Cambodia where most of women who work in paid work are in unskill labor for instance garment factory. Their bargaining within the household would be too low as they work based on low skill labor as well as low wage (International Labour Organization, 2016). Another support idea of this result may because of the partrichy society in Cambodia where people perception is women will always be in a lower position than men (The Cambodian Committee of Women, 2007). When women

financially increase their capability of their role in the family, men might use violence as an instrumental to take his authority back (Macmillan & Gartner, 1999). This result is consistent with the study of Lenze and Klasen (2017) which the employment of women is inconclusive on the domestic violence.

Wife education has a strongly negative significant effect on domestic violence. Women with primary education is negative significant at 1 percent of statistical significance. That is, the women who finish primary school have experienced less violence by 5.2percent, on average, holding other variables constant, than women who are uneducated. According to the magnitude of coefficients of level women's education, the incidence of domestic violence is becoming lower when her education is higher. This result contradicts to the previous study of Eng et al., (2010) in case of Cambodia which state that women's education has no effect on the domestic violence. In contrast, both models find there is no evident support for men's education effect on domestic violence. The age of women at marriage seems to be negative effect to domestic violence which increasing age of women at marriage will lead to decrease the violence family. This is, however, not statistical significant in both model specifications. For the variable of spouse age difference, more narrowing age gap between spouses, the incidence of household violence is more likely to occur, but these variables are not significant.

For women's perception on domestic violence which is included in the model of specification 1, its coefficient is positive sign in which one percentage increase of women tolerance toward domestic violence will increase family violence by 1.7 percentage points, but less statistical significant in this case. For the variable of intergenerational violence which women with violent family background is positively significant at 1 percent statistical significance. Meaning that for women whose father ever beat her mother tend be experienced violence in her current relationship. This result is support for one of prediction of game theoretical of intergenerational violence of Pollak (2004).

Comparing among men who work in agriculture and other occupation, men's agricultural occupation is more likely use violence in family than men's working in other fields, however, there is no evidence in term of statistical significance which is inconsistency with the previous method. In contrast, the alcohol consumption of men is strongly positive significant at 1 percent statistical significance, that is the probability of beating wife of husband who consumes alcohol is higher than men who do not consume alcohol by 2.7 percent, holding other variables constant.

It shows that men who do consume alcohol, their behavior might change and are easier to use violence than men who do not consume alcohol. This evidence is confirmed with many previous studies such as (Hindin et al., 2008).

For household characteristics, among households who are believe in Buddhism and other religions, the incidence of domestic violence tends to happen in Buddhist believers more than the other religions. Base on the coefficient of both models, the statistic shows that the prevalence of domestic violence of Buddhist religions is 5.8 percent higher than others religions, with 5percent level of statistically significance, given other variables constant. Another important variable of household characteristic such as number of children in family is positively significant at 1 percent statistical significance. This can be interpreted that family with one additional child, on average, holding other variable constant, will increase the rate of violence in family about 2.6 percent. Without family planning, household may bear the cost of living and it can lead to household poor status and finally increasing the probability of violence.

For the wealth index, which stands for the family standard of living, found that the better standard of living of the family, the less frequency of violence that would be happened. The result shows that the coefficient of the variable wealth quintiles have negative sign and the magnitude coefficients of wealth quintiles become double from poor to the richest quintile in both model specifications with strongly statistical significant. This result can be interpreted as the better household standard of living will reduce the incidence of domestic violence significantly. For the regional poverty status, the regions with a higher rate of poverty is more likely exposure to higher rate of domestic violence as well.

**Table 5: Instrumental Variable (IV) Estimation for Domestic Violence**

Dependent Variable: Violence Index		Model 1		Model 2	
Independent Variable	Coefficient	P-value	Coefficient	P-value	
Women's employed	0.445	0.064	0.457	0.059	
Spouse age difference	0.000	0.790	0.000	0.778	
Women Education (no education)					
Primary Education	-0.052***	0.004	-0.052***	0.004	
Secondary Education	-0.084***	0.000	-0.086***	0.000	
Higher Education	-0.227**	0.033	-0.235**	0.028	
Women perception on DV	0.017	0.273			
Women age at marriage	-0.001	0.546	-0.001	0.569	
Women violence background	0.081***	0.000	0.082***	0.000	
Husband years of schooling	-0.003	0.059	-0.003	0.057	
Husband occupation: agriculture = 1	0.017	0.480	0.018	0.456	
Husband Alcohol consumption	0.027	0.154	0.027	0.166	
Religion Budish =1	0.057**	0.021	0.058**	0.022	
Number of Children	0.025***	0.000	0.026***	0.000	
Wealth index: Reference = Poorest					
Poor	-0.023	0.150	-0.024	0.145	
Middle	-0.042**	0.026	-0.043**	0.025	
Rich	-0.050**	0.026	-0.051**	0.025	
Richest	-0.040	0.052	-0.041	0.050	
Rural	0.006	0.730	0.007	0.709	
Regions: Reference = Phnom Penh					
Province 1	0.020	0.279	0.021	0.252	
Province 2	0.018	0.348	0.019	0.334	
Province 3	0.073**	0.037	0.076**	0.031	
Constant	-0.042	0.580	-0.042	0.590	
IV result of the first stage					
Women currently breast-feeding	-0.051***	0.002	-0.051***	0.002	
F-test of Jointly Significant	16.01	0.000	16.84	0.000	

\*\* = 0.05 significant level and \* = 0.01 significant level. P-value is shown in parenthesis.

## 5. Conclusion

The study of domestic violence has been concerned with its negative impact is credible to the economic growth. While adopting women in labor market is believed as a policy instrument to improve women, household and children well-being, few empirical researches have been done on the effect of women working status on domestic violence. Using data from Demographic and Health Survey of Cambodia 2014, this study aims to investigate the determinants of domestic violence, specifically women's labor force participation.

The estimation result of ordinary least square (OLS) and binary probit is biased and inconsistent due that these methodologies do not account for the endogeneity while domestic violence and women employment status are endogenous variables. Based on the result of two-stage least square draws an opposite result from the previous methodologies, specifically, increasing jobs for women in labor force market has not had significant effect on reducing domestic violence. The result also draws other crucial variables of determinants of domestic violence from women, men and household characteristics. For instance, women's education is robust negative affect on domestic violence as well as the household living condition in which a better standard of living of household, the less prevalent of domestic violence. In contrast, husband alcohol consumption and number of children in the family are positively correlated to the incident of domestic violence as well as the regions where poverty rate is high. Thus, the conclusion that policy implications suggest that it will take more than an improvement in women's employment options to address the problem of domestic violence.

There are many policies which can be implemented in order to reduce the spousal violence in Cambodia. The policy of empowering women by enhancing women in labor force participation has an inconclusive effect on domestic violence. This status improvement may not be sufficient for women to release themselves from violence as Cambodia formal jobs is specifically hire women with low-skilled labor. The policies option should be focus on increasing the threshold of women bargaining power such as education and family planning. Comparing with women working status, balancing education for both genders should be implemented while improving for men only is not guarantee impact on violence. When the initial status of women's bargaining power increases, they may able to work with high skill labor with higher income and finally free themselves from domestic violence. The policy also should focus on the negative externality of consuming alcohol for men. The further policy should stress on poverty both in community level and household level. Finally, the result of this study also shows that any policy that reduces the domestic violence today can also affect long term generation.

Because of limitation of the appropriate instrumental variable, more accuracy of IV is needed for next study on the link between women's employment and household violence. While the data of this study is unable to focus on more detail of the interaction term between variables of employment and educational level of women, this study cannot distinguish the determinant of domestic violence by level of women bargaining power. Women employment data that varies enough between high and low skill labor is needed for future study.

## References

- Aizer, A. (2010). The Gender Wage Gap and Domestic Violence. *The American economic review*, 100(4), 1847–1859.
- Alonso-Borrego, C., & Carrasco, R. (2017). Employment and the risk of domestic violence: does the breadwinner's gender matter? *Applied Economics*, 5071-5091.
- Asian Development Bank (ADB). (2014). *Cambodia: Country poverty analysis 2014*. Mandaluyong City: Asian Development Bank.
- Bhattacharya, H. (2015). Spousal Violence and Women's Employment in India. *Feminist Economics*, 21(2), 30-52.
- Bhattacharyya, M., Chhachhi, A., & Bedi, A. S. (2009). Marital Violence and Women's Employment and Property Status: Evidence from North Indian Villages. *IZA Discussion Paper No.4361*, Institute for the Study of Labor - Forschungsinstitut zur Zukunft der Arbeit.
- Bloch, F., & Rao, V. (2002). Terror as a Bargaining Instrument: A Case Study of Dowry Violence in Rural India. *American Economic Review*, 92(4), 1029-1043.
- Bowlus, A.J., & Seitz, S. (2006). Domestic violence, employment, and divorce. *International Economic Review*, 47(4), 1113-1149.
- Canavire Bacarreza, G. J., & Avila, F. R. (2010). Domestic Violence and Labor Market Outcomes: Evidence from a Mixed-Race Developing Country. *IZA Discussion Paper No.5273*, Institute for the Study of Labor - Forschungsinstitut zur Zukunft der Arbeit.
- Cavalcanti, T.V., & Tavares, J. (2008). The Output Cost of Gender Discrimination: A Model-Based Macroeconomic Estimate. *Proceedings of the German Development Economics Conference*. Zürich.
- Chin, Y. M. (2012). Male backlash, bargaining, or exposure reduction?: women's working status and physical spousal violence in India. *Journal of Population Economics*, 25(1), 175-200.
- Clark, C. J., Silverman, J., Khalaf, I. A., Ra'ad, B. A., & Aha'ar, Z. A. (2008). Intimate Partner Violence and Interference with Women's Efforts to Avoid Pregnancy in Jordan. *Studies in family planning*, 39(2), 123-132.
- Dugan, L., Nagin, D. S., & Rosenfeld, R. (1999). Explaining the decline in intimate partner homicide: The effects of changing domesticity, women's status, and domestic violence resources. *Homicide Studies*, 3(3), 187-214.
- Duvvury, N., Callan, A., Carney, P., & Raghavendra, S. (2013). intimate partner Violence: economic costs and implications for growth and development. *Women's Voice, Agency, & Participation Research Series*.

- Eng, S., Li, Y., Mulsow, M., & Fischer, J. (2010). Domestic Violence against Women in Cambodia: Husband's Control, Frequency of Spousal Discussion, and Domestic Violence Reported by Cambodian Women. *Journal of Family Violence*, 25(3), 237–246.
- Eswaran, M., & Malhotra, N. (2011). Domestic violence and women's autonomy in developing countries: theory and evidence. *Canadian Journal of Economics/Revue canadienne d'économie*, 44(4), 1222–1263.
- Farmer, A., & Tiefendthaler, J. (2004). The employment effects of domestic violence. *In Accounting for Worker Well-being*, 301-334.
- Farmer, A., & Tiefenthaler, J. (1997). An Economic Analysis of Domestic Violence. *Review of Social Economy*, 55(3), 337-358.
- Flake, D.F. (2005). Individual, Family, and Community Risk Markers for Domestic Violence in Peru. *Violence Against Women*, 11(3), 353-373.
- Goetz, A. M. (1996). Who takes the credit? Gender, power, and control over loan use in rural credit programs in Bangladesh. *World Development*, 24(1), 45-63.
- Gujarati, D. (2014). *Econometric by Example*. Palgrave Macmillan.
- Heath, R. (2014). Women's Access to Labor Market Opportunities, Control of Household Resources, and Domestic Violence: Evidence from Bangladesh. *World Development*, 57 (Issue C), 32-46.
- Hindin, M.J., Kishor, S., & Ansara, D.L. (2008). *Intimate partner violence among couples in 10 DHS countries: predictors and health outcomes*. DHS Analytical Studies 18.
- Hornung, C.A., McCullough, B.C., & Sugimoto, T. (1981). Status Relationships in Marriage: Risk Factors in Spouse Abuse. *Journal of Marriage and Family*, 43(3), 675-692.
- International Labour Organization. (2016). *Cambodian Garment and Footwear Sector Bulletin*. Geneva: International Labour Organization.
- Jana, L., & Klasen, S. (2016). Does Women's Labor Force Participation Reduce Domestic Violence? Evidence from Jordan. *Feminist Economics*, 1-29.
- Jejeebhoy, S.J. (1998). Associations between Wife-Beating and Fetal and Infant Death: Impressions from a Survey in Rural India. *Studies in Family Planning*, 29(3), 300-308.
- Klasen, S., & Lamanna, F. (2009). The Impact of Gender Inequality in Education and Employment on Economic Growth: New Evidence for a Panel of Countries. *Feminist Economics*, 15(3), 91-132.
- Koenig, M.A., Ahmed, S., Hossain, M.B., & Mozumder, K. A. (2003). Women's status and domestic violence in rural Bangladesh: Individual- and community-level effects. *Demography*, 40(2), 269-288.
- Luke, N., & Munshi, K. (2011). Women as agents of change: Female income and mobility in India. *Journal of Development Economics*, 94(1), 1-17.



- Lundberg, S., & Pollak, R. A. (1994). Noncooperative Bargaining Models of Marriage. *The American Economic Review*, 84(2), 132-137.
- Macmillan, r., & Gartner, r. (1999). When She Brings Home the Bacon: Labor-Force Participation and the Risk of Spousal Violence against Women. *Journal of Marriage and Family*, 16(4), 947-958.
- McElroy, M. B. (1990). The Empirical Content of Nash-Bargained Household Behavior. *Journal of Human Resources*, 25(4), 559-583.
- National Institute of Statistics, Directorate General for Health [Cambodia], & ORC Macro. (2001). *Cambodia Demographic Health Survey 2000*. Phnom Penh, Cambodia, and Calverton, Maryland USA: National Institute of Statistics, Directorate General for Health, and ORC Macro.
- National Institute of Statistics, Directorate General for Health, & ICF International. (2015). *Cambodia Demographic and Health Survey 2014*. Phnom Penh, Cambodia, and Rockville, Maryland, USA: National Institute of Statistics, Directorate General for Health, and ICF International.
- Olarte, E.G., & Llosa, P.G. (1999). Does poverty cause domestic violence? Some answers from Lima. *Inter-American Development Bank*.
- Organization, W.H. (2013). *Global and regional estimates of violence against women: prevalence and health effects of intimate partner violence and non-partner sexual violence*. World Health Organization .
- Panda, P., & Agarwal, B. (2005). Marital violence, human development and women's property status in India. *World Development*, 33(5), 823–850.
- Pollak, R. A. (2004). An intergenerational model of domestic violence. *Journal of Population Economics*, 311-329. doi:10.1007/s00148-003-0177-7
- Rawlings, S., & Siddique , Z. (2014). Domestic Abuse and Child Health. *IZA*, No. 8566.
- Seguino, S. (2000). Gender Inequality and Economic Growth: A Cross-Country Analysis. *World Development*, 28(7), 1211–1230.
- Seguino, S., & Floro, M. S. (2003). Does Gender have any Effect on Aggregate Saving? An empirical analysis. *International Review of Applied Economics*, 17(2), 147-166.
- Sen, A. (1990). Gender and Cooperative Conflicts. *Persistent Inequalities: Women and World Development*, Edited by: Tinker, Irene, 147-149.
- Sen, A. (2001). *Development as Freedom*. Oxford Paperbacks.
- Sherman, L. W., Schmidt, J. D., Rogan, D. P., Gartin, P. R., Cohn, E. G., Collins, D. J., & Bacich, A. R. (1991). From Initial deterrence to longterm escalation: short-custody arrest for poverty Ghetto domestic violence. *Criminology*, 29(4), 821-850.

- Srinivasan, S., & Bedi, A. S. (2007). Domestic Violence and Dowry: Evidence from a South Indian Village. *World Development*, 35(5), 857-880.
- stotsky, J. G. (2006). *Gender and its relevance to macroeconomic policy: A survey*. International Monetary Fund.
- Tauchen, H. V., Witte, A. D., & Long, S. K. (1991). Domestic Violenc: A Nonrandom Affair. *International Economic Review*, 32(2), 491-511.
- The Cambodian Committee of Women. (2007). *Violence Against Women: How Cambodian Laws Discriminate Against Women*. Phnom Penh: CAMBO.
- Thomas, D. (1997). Incomes, Expenditures and Health Outcomes: Evidence on Intrahousehold Resource Allocation. *Intrahousehold resource allocation in developing countries*, 142-64.
- Tolman, R. M., & Wang, C. H. (2005). Domestic Violence and Women's Employment: Fixed Effects Models of Three Waves of Women's Employment Study Data. *American Journal of Community Psychology*, 147-158.
- Vijayendra , R. (1997). Wife-beating in rural South India: A qualitative and econometric analysis. *Social Science & Medicine*, 44(8), 1169-1180.
- Wooldridge, J. M. (2015). *Introductory econometrics: A modern approach*. Nelson Education.

## Appendix

**Table 1: Definitions of Domestic Violence**

Variable	Definition
Less severe violence	<p>Women were asked whether her husband ever:</p> <p>Push her, shake her, or throw something at her?</p> <p>Slap her?</p> <p>Twist her arm or pull her hair?</p> <p>Punch her with his/her fist or with something that could hurt her?</p> <p>Kick her, drag her, or beat her up?</p>
Severe violence	<p>Women were asked whether her husband ever:</p> <p>Try to choke her or burn her on purpose?</p> <p>Threaten or attack her with a knife, gun, or any other weapon?</p>
Sexual Violence	<p>Women were asked whether her husband ever:</p> <p>Physical force her to have sexual intercourse with him even she did not want to?</p> <p>Physically force her to perform any other sexual acts she did not want to?</p> <p>Force her with threats or in any other way to perform sexual acts she did not want to?</p>
Emotional violence	<p>Women were asked whether her husband ever:</p> <p>Say or do something to humiliate her in front of others?</p> <p>Threaten to hurt or harm her or someone close to her?</p> <p>Insult her or make her feel bad about herself?</p>
Perception on domestic violence	<p>women were asked would she accept her husband beating on her in case:</p> <p>she went out without tell him</p> <p>neglects the children</p> <p>argues with him</p> <p>refuses to have sex with him,</p> <p>burns the food or asking him to use condom</p>

**Table 2: Definition of Dependent and Independent Variables**

Variable	Definition
Women's age at marriage	Years of women age at her first marriage
Women education	1 = No education (based), 2 = primary, 3 = secondary, 4 = higher
Women labor market	1 = women work for other with cash only with whole year, 0 = for otherwise
Women's perception	Justification index
Intergenerational violence	1 = Women's family background, father beat her mother as she young
<i>Husband's characteristics</i>	
Husband school	Husband years of schooling
Husband agriculture	Husband occupation agriculture, 0 = Non agriculture
Alcohol	1 = Husband's alcohol consumption yes, 0 = No
<i>Household Characteristic</i>	
Religion	1 = Buddhist, 0 = others
Number of children	Number of children in family
Wealth index	1 = poorest (based), 2 = poor, 3 = middle, 4 = rich, 5 = richest
Rural	1 = living in Rural, 0 = urban
<i>Dependent Variable</i>	
Severe violence	1 = severe violence, 0 = not severe violence
Less severe violence	1 = less severe violence, 0 = not less severe violence
Emotional violence	1 = Emotional violence, 0 = not emotional violence
Sexual violence	1 = sexual violence, 0 = not sexual violence
Any violence	1 = any kind of violence, 0 = not any violence
Violence index	The average of domestic violence
Phnom Penh	The capital city of Cambodia with lowest community poverty report
Province 1	This region include provinces: Kandal, Preah Sihanouk, Kep, Svay Rieng, Takeo, Koh Kong, Kom Pot which the rate of community under poverty from 15percent to 20percent
Province 2	Kompong Cham, Prey Veng, Pailin, Battambang, Banteay Meanchey, Kompong Spue, Kompong Chnang, Pursat, SiemRiep, Kompong Thom. These provinces is 20 percent to 30percent of communities under poverty
Province 3	Kratie, Mondolkiri, Ratnankir, Steung Streng, Preah Vihea. These provinces is more than 30percent of communities that under poverty

**Table 3: Summary of Variables**

Variables	Mean	Std. Dev.	Min	Max
<i>Women Characteristics</i>				
Women's education				
No education (reference)	0.1369	0.3414	0	1
Primary Education	0.5388	0.4991	0	1
Secondary Education	0.3059	0.4587	0	1
Higher Education	0.0282	0.1690	0	1
Women employed	0.1465	0.354	0	1
Women's perception	0.2796	0.3225	0	1
Women's age at marriage	19.97	4.2818	10	45
Intergenerational violence	0.1744	0.3856	0	1
Spouse's age difference	4.0777	5.004	-19	33
<i>Husband Characteristics</i>				
Husband's years of schooling	6.364	4.2539	0	20
Husband agriculture = 1	0.4987	0.5000	0	1
Alcohol	0.8604	0.3485	0	1
<i>Household characteristics</i>				
Religion	0.9474	0.2273	0	1
Number of Children	2.3925	1.6102	0	9
Poorest (reference)	0.1876	0.4015	0	1
poor	0.1976	0.4037	0	1
middle	0.1773	0.3779	0	1
rich	0.1905	0.3949	0	1
richest	0.2464	0.4220	0	1
Rural	0.7477	0.4272	0	1
<i>Regions</i>				
Phnom Penh (reference)	0.0576	0.2321	0	1
Region 1	0.2533	0.4342	0	1
Region 2	0.4652	0.4988	0	1
Region 3	0.1759	0.3805	0	1
<i>Instrumental variable</i>				
Women currently breast-feeding	0.1939	0.3951	0	1

Source: Authors' Calculation. Data is based on CDHS, 2014