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Working Paper No. 939

The Macroeconomic Loss Due to Violence against Women and Girls: The Case of Ghana

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ABSTRACT

Violence against women and girls (VAWG) is a widely recognized human rights violation with serious consequences for the health and well-being of women and their families. However, the wider ramifications of VAWG for businesses, communities, economies, and societies are only recently being recognized. Despite this recognition, there are few studies exploring how the economic and social impacts of VAWG affect economic growth, development, and social stability. In this paper, applying the social accounting approach, we outline the ripple effects of VAWG from the individual micro-level impacts to the macroeconomy. Our analysis shows the loss due to VAWG amounts to about 0.94 percent of Ghanaian GDP and is a permanent invisible leakage from the circular flow of the economy. The analysis also shows that the loss due to violence is not just a one-off leakage from the macroeconomic circular flow and explores the potential consequences of the multiplier loss due to VAWG over a period of time. The cumulative loss is sizeable and inflicts a premium on GDP growth over time—in simple terms, inaction today in addressing VAWG for cost considerations will impose a larger cost premium on economic growth, which will constrain tomorrow's resources.

KEYWORDS: Violence against Women and Girls; Social Accounting Matrix; Productivity Loss; Economic Growth

JEL CLASSIFICATIONS: E16; E19; E71; J16; B54; O55

1. INTRODUCTION

Development discourse focuses on understanding the structural, institutional, and individual factors that influence economic development of a society over time. Three stylized facts dominate the development discourse. *First*, fertility decline is a key driver for economic growth and economic development (Barro 1991; Schultz 2005; Canning 2008; Karra et al. 2017). *Second*, improved health plays a crucial direct and indirect role in promoting economic growth (Kalemili-Ozcan, Ryder, and Weil 2000; Bloom et al. 2004; Finlay 2007). *Third*, education is a central driver for economic development via its impact on the labor force's skill level and expanded capabilities (Dreze and Sen 1997; Monteils 2004; Breton 2013). These stylized facts underlie the traditional models of growth, such as Solow's (1956) model, which places equal emphasis on both the quantity and quality of labor.

A common theme that underpins these discourses is the role of gender and gender norms through which these drivers of development mediate development and change. There have been substantial contributions on the gendered impacts of development in the literature, such as Elson (1995), Elson and Cagatay (2000), Braunstein, Bouhia, and Seguíno (2019), and Seguíno (2019). While it is recognized that the gendered impacts of development further reinforce the gendered division of labor, there is little attention paid to the impacts of the mechanisms through which gender norms are sustained at the household level and in the community, or their impact on the main drivers of development. VAWG is one of the key mechanisms that sustain gender norms, however, there has been limited attention to its interaction with and impact on the economy, particularly at the macroeconomic level.

VAWG, a fundamental human rights violation, is a global problem with one in three ever-partnered women experiencing physical and/or sexual violence by an intimate partner (WHO 2013). Moreover, women also experience violence in the family, workplace, and public spaces. Equally, there is growing empirical evidence regarding violence's impact on physical and mental health, women's reproductive health outcomes, the well-being of children and household members, employment and income loss, and loss of earning potential for the victims of violence (WHO 2013; Vyas 2013; Bacchus et al. 2018). However, these empirical evidences remain

outside the purview of the gender-neutral rational agent macroeconomic models; thus, the issue of VAWG does not enter either macroeconomic or development policy considerations.

In order to fill this gap and provide robust evidence on the impact of VAWG on national economies, the UK Department of International Development (DFID) funded and supported in-depth studies on the economic and social costs of VAWG in Ghana, Pakistan, and South Sudan as part of its global “What Works to Prevent Violence against Women and Girls” program. This paper presents findings from the study in Ghana, which was led by the National University of Ireland, Galway in partnership with the Institute of Statistical, Social, and Economic Research at the University of Ghana. The research included a representative survey of 2,002 women (“the women’s survey” hereafter) across the ten main provinces of Ghana, probing both the violence experienced by women as well as the specific economic and social costs they incurred as a result. In this report we develop a comprehensive analytical framework and provide a rigorous analysis of the impact of VAWG to Ghana’s economy as a whole using the data from the women’s survey, which was collected for the first time in Ghana.

The report is structured as follows. In the rest of section 1, we introduce country characteristics and additional details of the field survey on the prevalence of VAWG in Ghana. In section 2, we turn to briefly reviewing the methodologies commonly used in costing studies. While the existing studies provide economic costs of VAWG, a key gap is the lack of knowledge about its impact on the *economy as a whole*, i.e., the macroeconomic loss that considers the circular linkages in an economy. In section 3, we detail the methodology applied for estimating the direct and indirect losses to the economy. Considering the impacts of VAWG on paid work, unpaid domestic and care work, and days of low productivity, we derive the unit costs for estimating the direct loss at the national level in section 3.1. A detailed discussion of the social accounting approach used to estimate the indirect loss due to violence via the economy’s sectoral linkages is provided in section 3.2. Our results and findings are discussed in section 4. A key finding is that the direct loss across the three dimensions of VAWG’s impact considered in the study (i.e., absenteeism, low productivity at work, and missed unpaid household and care work) stands at GHC 2.3 billion (US\$527 million at the 2017 exchange rate) or about 1.1 percent of Ghana’s 2017 GDP. We present a detailed analysis of the direct and indirect losses considering only

absenteeism from paid work, which results in a reduction of household income and thus demand for commodities. Applying this loss to the social accounting matrix (SAM), we trace the impact on various sectors and estimate the output, income, and tax multipliers. We further extend the point estimates to highlight the cumulative loss due to VAWG over time and its implications for economic growth. Section 5 draws the discussion together, highlighting the key innovations in this research.

1.1 Country Characteristics

Ghana is a stable unitary constitutional state with a population of 28,033,375. Women comprise 50.3 percent of the total population. It is also a country with a large young population. Ghana was classified as a middle-income country by the World Bank in 2011. Since then, growth has declined and in 2016 Ghana's GDP growth rate was 3.6 percent (IMF 2017). Despite a declining trend, growth has been broad-based, driven largely by the services sector with a growth rate of 5.9 percent in 2016, followed by agriculture (3.6 percent). Overall, in 2016, the services sector contributed 54.3 percent of GDP.

In 2016, Ghana stood at 59 out of 144 countries in the Global Gender Gap Index compiled by the World Economic Forum. The Global Gender Gap Index measures the differences between women and men in terms of economic participation and opportunity, educational attainment, health and survival, and political empowerment. In the area of economic participation and opportunity, Ghana was ranked number 10 among all 144 countries, highlighting women's high participation in economic activity and a lower gender gap in labor force participation. According to Ghana Statistical Service's (GSS) 2015 Labor Force Survey, women's labor force participation rate was 64.6 percent. Other important aspects of greater gender equality in economic activity are the decreasing gender gap in wages overall, and the proportion of women in the category of professional and technical workers.

At the same time, as progress in regards to gender equality has been made in some areas, Ghanaian culture continues to be identified as deeply traditional and patriarchal (Amoakohene 2004; GSS 2012). Inequitable gendered social norms in Ghana result not only in widespread discrimination but also in VAWG. Findings from the GSS's 2006 and 2011 Multiple Indicator

Cluster Surveys (MICS) show that tolerance of VAWG has become more prevalent in Ghana despite efforts toward its reduction (Ministry of Gender, Children and Social Protection 2014).

Various studies have shown a high level of VAWG in Ghana. According to the 2008 Ghana Demographic and Health Survey, which is a nationally representative survey, 39 percent of ever-married women aged 15 to 49 have experienced emotional, physical, or sexual violence by a partner at some point in their lives (GSS and Macro International 2009). The same survey reported that 35 percent, or one in three married women in Ghana have experienced emotional, physical, or sexual violence by their partner in the last 12 months.

1.2 The Women’s Survey, 2016

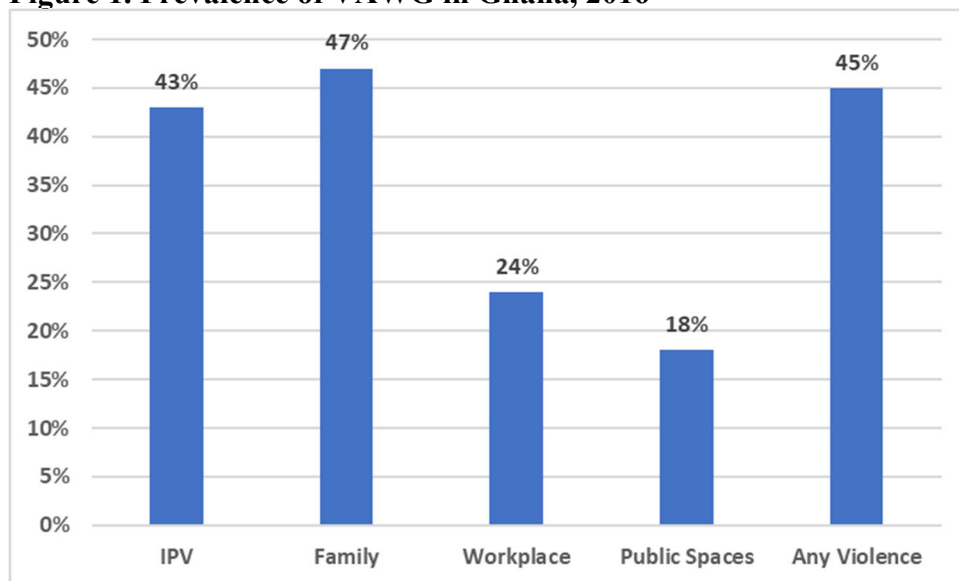
To explore the level of VAWG and its impacts in Ghana, a nationally representative survey of 2,002 women aged 18–60 across ten regions of Ghana was undertaken by the National University of Ireland, Galway and the University of Ghana in 2016. The women’s survey was representative in terms of major demographics such as age, locality, education, and household size. One area of representativeness that was not so clear cut was women’s economic participation. In terms of employment distribution, 45.1 percent of women aged 18–60 in the 2016 survey were employed compared to an employment rate of 64.6 percent for women aged 15 years and older as per the national labor force survey (GSS 2015). A closer examination of the data indicates that the discrepancy in the two rates was primarily due to the lower proportion of contributing family workers, defined as unpaid family members working in a family enterprise, in the study sample. The proportions of women in the women’s survey sample who are salaried and self-employed are almost identical to national proportions from the labor force survey.¹ Given this, for estimation of working women, we have used the national labor force survey rate rather than the women’s survey sample rate.

In the 2016 women’s survey, conducted as part of the “What Works to Prevent Violence against Women and Girls” project, women reported experiencing violence by husbands/spouses, family members, work colleagues, and strangers in public spaces. Violence by the husband/partner, or

¹ Please see Asante et al. 2019 for a more detailed discussion of the national representativeness of the 2016 women’s survey

what is referred to globally as intimate partner violence (IPV), is a common experience reported by women in Ghana. IPV includes any behavior by the partner that causes psychological, physical, or sexual harm encompassing economic, psychological, physical, and/or sexual violence. More than four in ten (43.1 percent) married/partnered women reported experiencing IPV in the past 12 months.² Women also face psychological, physical, and/or sexual violence from other members of the family and their community apart from IPV. Among women living in extended families almost one in two experienced family violence (47 percent). Nearly one in four women experienced violence in the workplace (25 percent), while fewer than one in five experienced violence in public spaces (17 percent). Overall, 34 percent of the women surveyed experienced violence by nonpartners in the past 12 months. Of particular importance in terms of the economic impact is to note that 24 percent of working women in Ghana experienced IPV and 52 percent experienced any violence (inclusive of IPV, family violence, workplace violence, and violence in public spaces) in the past 12 months.

Figure 1. Prevalence of VAWG in Ghana, 2016



Source: Authors' estimation using the field survey in Ghana.

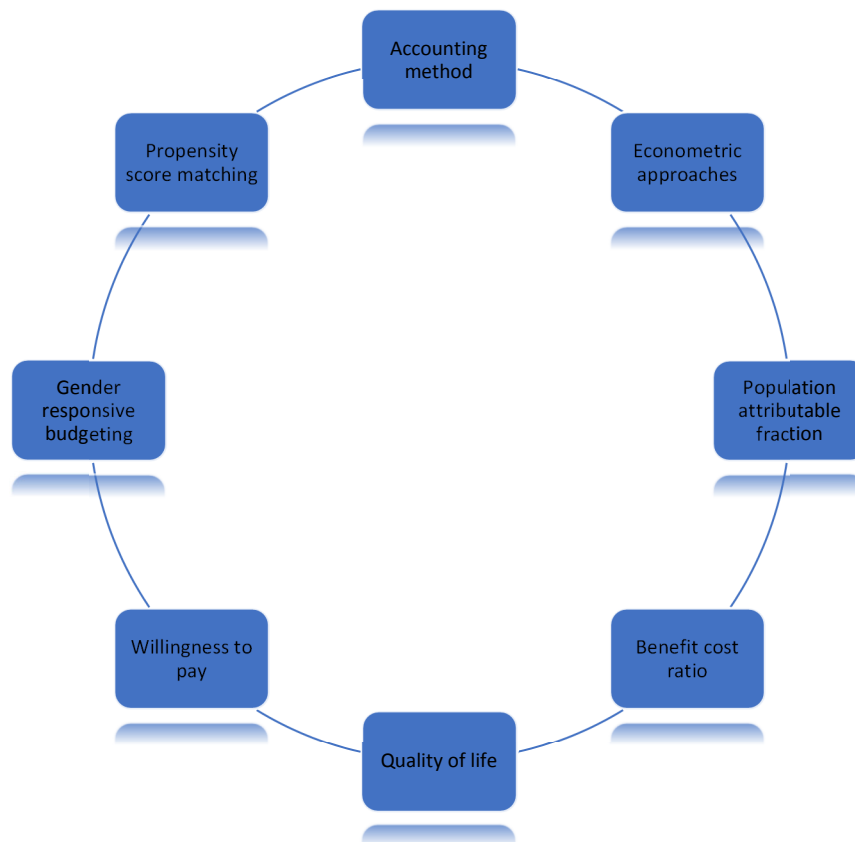
² The slightly higher rate than the Demographic and Health Survey (DHS) rate is result of two aspects: the inclusion of economic violence in the measurement and the extended age range from 15–49 in DHS to 18–60 in the 2016 women's survey. See GSS and Macro International (2009) for main results of the DHS.

2. REVIEW OF LITERATURE

It is well-established in the literature on VAWG that its social and economic costs manifest as multiple impacts at the individual, household, business, government, and wider community levels (Duvvury et al. 2013; Day 2005; Walby and Olive 2014). The impact of VAWG also has a temporal dimension. Impacts can be immediate, such as missing work (paid and unpaid), poor physical and mental health status, poor reproductive outcomes, and out-of-pocket expenditures for accessing services and replacement costs for lost property (Bacchus et al. 2018; WHO 2013; Duvvury, Carney, and Ngyuen 2012). But violence also results in medium- to long-term impacts on outcomes such as human capital formation in terms of education, expanding skills and experience, upward mobility within the workforce, chronic disability, mortality and chronic morbidity, stability of family life, and loss of quality of life (Sabia, Dillis, and DeSimone 2013; Crown et al. 2011; Reeves and O’Leary-Kelly 2007).

Meta reviews of costing studies (Duvvury, Grown, and Redner 2004; Morrison and Orlando 2004; Day 2005; Willman 2009; Duvvury et al. 2013) have identified several distinct methodologies to assess the cost of VAWG, including the direct accounting methodology, human capital approaches (including propensity score matching), willingness to pay/contingent valuation, disability-adjusted life years, and gender responsive budgeting. Over 60 studies have used one or some combination of these methodologies to establish direct and indirect tangible costs, as well as direct intangible costs of pain, suffering, and/or loss of quality of life in high-, middle-, and low-income countries due to violence (Duvvury et al. 2013).

Figure 2: Methodologies for Quantifying the Impacts of VAWG



Source: Authors' own based on review of literature.

Depending on the methodology or mix of methodologies employed, studies have identified costs such as expenditures by survivors for services to treat or mitigate the health and psychosocial impacts of violence; opportunity costs in terms of the impacts on human capital, work, and productivity; and welfare costs/losses in terms of the intangible impacts of pain, suffering, and decrease in quality of life. In addition, studies have estimated the costs borne by the state in providing services to survivors of violence by the health, justice, and social welfare sectors.

A study by Zhang et al. (2012), primarily using an accounting methodology, provides an estimate of the economic impact of spousal violence in Canada in 2009 of CA\$7.4 billion (or CA\$220 per person). In US dollars this comes to US\$6.8 billion (or US\$204 per person). Three categories of cost are included: the impact borne by the justice system, the impact borne by primary victims, and the impact borne by third parties. Justice system (both criminal and civil) impacts include the costs of legal aid, police and courts, and divorce and separation costs.

Primary victim costs include physical and mental health care, productivity loss, personal costs, and intangible victim costs (i.e., pain and suffering and loss of life). Finally, third-party costs include loss to employers and governments.

Studies focused on establishing opportunity costs have tended to employ various econometric techniques such as logistic regression, multinomial regressions, or propensity score matching. For example, Vyas (2013) explored the relationship between IPV and women's weekly earnings in Tanzania. This study examined the difference in women's weekly earnings from formal wage work and nonagricultural self-employment using data from the 2008–9 Tanzania National Panel Survey. The results show that abused women earn less than nonabused women, with the greatest loss experienced by women in formal wage work and by women in urban areas. This equates to an estimated productivity loss of 1.2 percent of Tanzania's GDP. In Colombia, Ribero and Sánchez (2004) found that women who experienced moderate violence would have earned approximately US\$60 more per month if they had not been abused; women who experienced sexual violence would have earned US\$100 more per month. This is compared to mean monthly earnings for the entire sample of US\$142, therefore representing a significant reduction in their earnings as a result of violence. The lower earnings of violence survivors are an outcome of higher absenteeism due to poor physical and mental health, lower productivity via tardiness and work distraction, and greater likelihood of employment instability.

Other studies have used quality of life losses (either measured as “disability-adjusted life years” [DALYs] or “years of life lost” [YLL]) to measure the more intangible impacts of pain, suffering, and lowered well-being. Brown (2008) used data from the World Health Organization and the World Bank to estimate the economic value of DALYs due to violence in the European Union. The report estimates that 48.4 million DALYs were a result of 1.6 million deaths due to violence in 2002, at a total estimated economic value of US\$151 billion (in constant US\$ for the year 2000). The DALYs caused by fatalities from domestic violence are calculated by taking all cases of death from domestic violence and grouping each by age, sex, and demographic region (Willman 2009). More recently, Stern et al. (2013) estimated that in total, 20,000 years of life are lost in Switzerland due to deterioration of quality of life as a result of IPV. By assigning a value of CHF100,000 to one year of life lost, the total cost is estimated to be CHF2 billion.

Another methodology that has been used by some is the “willingness to pay” or “contingent valuation” methodology. The willingness to pay approach is based on the assumptions of basic cost-benefit analysis, which say that the cost to society of an undesirable outcome will equal the amount people would be willing to pay to avoid that outcome (Willman 2009). Walby and Olive (2014) use this methodology to examine the physical and emotional impact of violence on victims in the United Kingdom’s “burden of disease” methodology, which estimates the cost of gender-based violence (GBV)³ and IPV by examining the average loss of healthy life years through injury per crime type multiplied by the value in monetary terms of a healthy life year. Using this approach, cost of GBV’s physical and emotional impact is estimated to be €19 billion, of which 89 percent was due to GBV experienced by women in the last 12 months. The cost of IPV’s physical and emotional impact was estimated at €7 billion, of which 91 percent was due to IPV against women.

Finally the broadest estimates of the costs of violence are either simple extrapolations employing scaled unit costs across contexts or thought experiments. Fearon and Hoeffler (2014, 23) provide an estimate of IPV’s costs at more than US\$4 trillion, based on estimating the number of women worldwide experiencing physical and/or sexual violence and applying the same “unit cost per assault”—or US\$199,642 for rape and sexual assault and US\$95,023 for aggravated assault.⁴ To estimate IPV’s costs, the lower rate for aggravated assault was used (though IPV includes both physical and sexual assaults) to derive a conservative estimate. The McKinsey Global Institute (2016) employed a similar approach to estimate the costs of pain, suffering, and stunted quality of life due to VAWG in the United States, drawing on a 2003 estimate by the National Center for Injury Prevention and Control of “present value of lifetime earnings” for IPV-related deaths (NCIPC 2003). The methods employed in these two studies provide a rough back-of-the-envelope estimate of the magnitude of the costs. However, neither of these estimates considers a more detailed analysis of the multiplier effect across various sectors of the economy.

³ This study had a broader focus on GBV experienced by women and men. GBV was defined as violence on the basis of a person’s gender reflecting gender norms, stereotypes, and unequal power relations within societies. Given the majority of those who experience GBV are women, GBV is often used interchangeably with VAWG.

⁴ The cost per assault figures were estimated by McCollister, French, and Fang (2010) in the United States.

To summarize, the existing approach for estimating the economic cost of VAWG is one of aggregating the specific monetary costs arising at an individual level. However, to advocate for governments to invest in providing services for women affected by violence, and in efforts to prevent VAWG, it is important to highlight potential gains to the overall economy to counter the role of macroeconomic constraints in determining budget allocations. It is likely that one of the main reasons why the issue of VAWG has not entered the macropolicy discourse is the lack of quantitative information on the specific micro-level costs that translate into costs to the overall economy. The aim of our research is to fill this gap and provide quantitative estimates of macroeconomic loss due to VAWG.

3. METHODOLOGY

VAWG is mostly recognized as an act of intimate partners. However, it is often committed by someone other than women's partners, such as family members, colleagues, peers, and even strangers. To make a comprehensive evaluation of the loss due to violence, we account for a range of forms of VAWG by both partners and nonpartners. VAWG impacts women on at least three dimensions:⁵ it reduces their productivity at work (via presenteeism or being less productive while at work due to distraction, reduced focus, working slowly, having accidents, etc.); it impacts their ability to perform household production, including care work; and it inflicts loss of income due to absenteeism. Using the 2016 women's survey for Ghana, we estimate the direct loss due to violence in the dimensions of absenteeism, presenteeism, and household production and unpaid care work.

3.1. Loss Due to Absenteeism

The macroeconomic costs of VAWG consist of direct and indirect loss of income as well as implicit losses in terms of compromised productivity of paid and unpaid work. The direct income loss is a tractable loss of earnings due to missed days of paid work, i.e. absenteeism, as violence inflicts physical and psychological harms that can prevent women from engaging in paid work.

⁵ The methodology employed here captures only part of the overall costs of VAWG, as costs such as intergenerational costs, loss of capabilities, and chronic pain and suffering are not included.

Using the women’s survey conducted in Ghana, we estimate the number of missing paid work days for women in rural and urban areas as a result of VAWG.

In Ghana, the 2016 women’s survey collected information about missed working days as a result of violence using both direct and indirect methods. In the case of the direct method, women were asked directly about the number of days of work they missed in the last 12 months because of experiencing violence. However, only 6 percent of women who experienced IPV reported missing work days and only 3 percent of women reported experiencing any violence. Given the low level of reporting regarding missed days or overall costs in general, an indirect method was used to estimate days lost. The indirect method uses an algorithm developed by Aristides Vara-Horna (2014, 2015) based on a review of management literature and used in his study on costs of IPV to businesses in Peru and Bolivia.⁶ In this method, women who reported engaging in economic activity were asked the number of days of work they missed (absenteeism) or were less productive (presenteeism) for a range of reasons in the past four weeks.⁷ A comparison of the difference in mean days of work missed between two groups—those who reported to have experienced violence and those who have not—was undertaken to establish the annual days lost to absenteeism and presenteeism due to violence. The mean difference was tested to be statistically significant using the Mann-Whitney Test.

Table 1 shows the prevalence (or incidence) of VAWG among working women in rural and urban areas of Ghana. In rural areas, 46.2 percent of women reported having experienced violence in the last 12 months. In urban areas, the incidence of violence is higher, at 54.9 percent.

⁶ We modified the algorithm developed by Vara-Horna (2014, 2015) slightly to address the fact that in the 2016 women’s survey, a significantly higher proportion of women were engaged in self-employment than in wage employment compared to Vara-Horna’s two studies, which focused on female waged/salaried employees. See Felix et al. (2019) for a more detailed discussion.

⁷ The reasons for absenteeism included seeking healthcare for the survivor and/or children, as well as time for addressing legal issues or not having sufficient money for transport. Presenteeism was measured by asking about lack of concentration, pace of work, energy levels, ability to perform tasks without stopping, and/or having accidents.

Table 1. Incidence of VAWG (percent of working women)

	Any violence
Rural	46.2
Urban	54.9

Note: Violence is inclusive of violence by partners and violence by family members, colleagues, peers, or strangers.

Source: Authors' estimation from the 2016 women's survey.

Table 2 displays the average number of missing paid work days among the victims of violence and among those who did not experience violence, as well as the difference in the mean values. Women in rural areas who experienced violence missed 42.53 days of paid work on average during the past 12 months, and women who did not experience the violence missed 17.52 days of paid work on average. The difference in the number of missing days of paid work between the two groups is 25.01 days. Similarly, among women in urban areas, the difference is 10.07 days. Note that the difference is larger among rural women than urban women, which may be indicative of a higher severity of VAWG in rural areas coupled with the fact that work in rural areas requires greater labor effort.

Table 2. The Number of Missing Paid Work Days Due to Violence: Absenteeism

Location	Experienced any violence	Did not experience	Difference	Test value (Z)*	Significance
Rural	42.53	17.52	25.01	-3.360	0.001
Urban	29.92	19.85	10.07	-3.527	0.000

Note: *The Mann-Whitney test was used to establish the statistical significance of difference in means.

Source: Authors' estimation from the 2016 women's survey.

The monetary value of the missing days is determined using the average daily earnings of employed women, ages 18–60, in rural and urban areas, who are estimated to number 2.32 and 2.45 million women, respectively. Using the 2012–13 Ghana Living Standard Survey (GLSS) and adjusting for inflation to the 2017 level, we estimate the average daily earnings for women in rural and urban areas to be GHC25.5 and GHC40.8, respectively. The direct income loss due to absenteeism is simply a product of the estimated daily earnings and number of missed paid work days.

The legal minimum daily wage (GHC8.8 in 2017) may be another benchmark price for the valuation of absenteeism. However, we believe that the incidence and severity of VAWG is not necessarily correlated with how much women earn in their paid work in any meaningful manner. Hence, it may be more appropriate to use the average earnings to capture the loss for the victim who may be earning more than other women.

3.2 Loss Due to Presenteeism

The direct loss of productivity at paid work due to violence—presenteeism—is an implicit loss that is not directly estimable like absenteeism, but nonetheless affects the economy at an aggregate level. Hence, the direct loss from presenteeism due to violence is imputed using a similar method as in the valuation of absenteeism: the product of the imputed number of paid work hours/days missing and average earnings.

Table 3 shows the number of imputed average missed days among women who have and have not experienced violence in the last 12 months. The difference between the two estimates yields the impact of violence in terms of presenteeism translated into the number of days missed. The implicit loss for the victims in rural and urban areas are estimated to be 23.46 days and 16.86 days of paid work during the last 12 months, respectively, while for women who did not experience violence it averaged 8.32 days and 7.36 days. The differences between the two groups are 15.14 days and 9.5 days in rural and urban areas, respectively. Note that the impact of violence in terms of presenteeism is stronger in rural areas than in urban areas. The difference may be due to the unobserved severity of VAWG in rural areas.

Table 3. The Implicit Number of Missed Paid Work Days Due to Violence: Presenteeism

Location	Experienced any violence	Did not experience	Difference	Test value (Z)*	Significance
Rural	23.46	8.32	15.14	-3.196	0.001
Urban	16.86	7.36	9.5	-5.044	0.000

Note: *The Mann-Whitney test was used to establish the statistical significance of difference in means.

Source: Authors' estimation from the 2016 women's survey.

3.3 Loss Due to Missed Household Production and Unpaid Care Work

To estimate the impact of violence on lost productivity in unpaid care work at home (i.e., household production days lost) we use the information in the women's survey about the number of unpaid household production and care work days missed by women due to their experience of violence in the last 12 months. Household production constitutes a set of activities at home related to sustaining self and family members, such as cooking, cleaning, caring for family members, etc. Total household production work days missed by women is estimated as a sum of days missed in the following fourteen activities: fetching water, fetching wood, caring for children, ironing, washing clothes, sweeping, washing dishes, washing vehicles, disposing of garbage, cooking, shopping for household needs, running errands, taking care of livestock or poultry, and making clothes for family.⁸

Table 4 shows the impact of violence in terms of the number of days missed of life-sustaining activities for families. The losses in rural and urban areas due to violence amount to 5.4 million and 5.5 million missed days, respectively, in terms of crucial care activities for family members.

The value of the missed household production days is a product of the number of days lost and the unit price of household production. A conventional valuation method uses various wages in occupations similar to activities in household production (Folbre 2015). It is however beyond the scope of this study, and hence we adopt a simplified method using the legal minimum daily earnings of GHC8.8. The simplified method can be justified under two conditions. First, the relevant occupations in the valuation of household production are low-wage service jobs (such as cooks, cleaners, home-based care workers, etc.), hence the minimum wage may be a good approximation for the actual wages earned by these workers. Second, on average, women spend close to five hours a day on these activities, as per the Ghana Time Use Report (GSS 2012b), and they also spend, on average, close to five hours on paid work. Hence the daily wage can be applicable in our simple exercise. Using the minimum wage, the total value of household production by women amounts to 14 percent of GDP, which is at the lower end of a conventional boundary of 10 percent to 25 percent of GDP (OECD 2018).

⁸ Women were asked the number of days they fully stopped or partially stopped the various activities.

Table 4. The Implicit Number of Missed Household Production Work Days per Year

Location	Percentage of women experiencing any violence missing care work	Total number of women missing care work*	Mean days missed	Total days missed
Rural	12.44	154,916	35.13	5,442,321
Urban	15.13	318,857	17.31	5,518,876

Note: *Number of women missing work is rounded for display but not for estimation.

Source: Authors' estimation from the 2016 women's survey.

Because of the implicit nature of presenteeism and lost household production, in this report we limit our analysis of the multiplier loss using the SAM to considering only the reduction in household income via the days of absenteeism due to violence reported by women.

3.4 Estimation of Indirect Loss

A SAM is a double-entry table that depicts accounts of economic agents—households, firms, and government—that engage in market transactions and transfers. It represents the circular flow of funds in an economy and describes interactions of:

- production activities (productive sectors of the economy) and commodities used (intermediate goods used in production);
- factors of production (capital and labor);
- agents (households, firms, and government);
- capital accounts (the financial side of the macroeconomy); and
- the rest of the world (imports, exports, and other financial flows)

These transactions are symmetrically arranged (in rows and columns) forming a square matrix that traces the origin and destination of expenditures and income received. The table's columns and rows represent production, income, and consumption flows in a balanced manner and total outlays from an agent (column sum) must equal total receipts to an agent (row sum). For instance, the total value of output in vehicle manufacturing must be equal to the total payment to other agents entitled to the payment for inputs used in the production, as seen in the table 1.

A SAM provides a framework for linking the macroeconomy with microeconomic activities, in particular those of households. An economy's national accounts disaggregate into

microeconomic accounts based on household surveys. The disaggregation augments the distributional and social dimensions of the matrix, thus allowing one to see how total income is distributed across factors and households. For example, labor, a factor of production, can be specified as being male or female, skilled or unskilled; each industry can be described by the types and amounts of inputs used, including the female/male intensity of labor employed. A SAM also allows for information on several household types to be presented depending on specific socioeconomic characteristics, i.e., rural versus urban location.

Table 5. Simplified Schematic SAM

	Endogenous					Exogenous				Total
	Production accounts			Institutional accounts						
	Activities (1)	Commodities (2)	Factors (3)	Households (4)	Government	Saving and Investment	Rest of world			
Endogenous	Activities (1)		Domestic supply (T ₁₂)						Gross income	
	Commodities (2)	Intermediate demand (T ₂₁)			Household final consumption (T ₂₄)	Government final consumption	Gross capital formation	Exports	Total demand	
	Factors (3)	Value added (T ₃₁)							Total factor income	
	Households (4)			Factor payments to households (T ₄₃)		Transfers to households		Remittances	Total household income	
Exogenous	Government		Sales and import taxes		Income taxes and fees			Foreign loans and grants	Government income	
	Saving and Investment				Private saving	Government net saving		Capital account balance	Total saving	
	Rest of world		Imports			Current transfers to ROW			Foreign exchange outflow	
Total	Gross output	Total supply	Payments for factors	Total household expenditure	Government expenditure		Foreign exchange inflow			

Source: Authors' own adaptation of a SAM.

Multiplier analysis based on a SAM exploits the endogenous circular linkages of accounts. Demand and supply linkages (T_{21} , T_{31} , and T_{24})—through which exogenous demand shocks in the form of an injection of funds—generate positive cycles of demand and supply responses for interdependent households and firms. The positive multiplying effects then raise the levels of income and production in the economy. It enables researchers to analyze macroeconomic impacts on production, employment, and income growth and distribution via direct and indirect channels (Pyatt and Round 1985).

To construct the multiplier matrix from the endogenous linkages, the demand-supply circular elements of the SAM (denoted as T_{ij}) are converted into the corresponding matrix of average expenditure propensities (denoted as A_{ij}) and called technical coefficients, which are simply the division of each element by column sum of the elements, Y_j :

$$A = \begin{bmatrix} 0 & T_{12}/Y_2 & 0 & 0 \\ T_{21}/Y_1 & 0 & 0 & T_{13}/Y_4 \\ T_{31}/Y_1 & 0 & 0 & 0 \\ 0 & 0 & T_{43}/Y_3 & 0 \end{bmatrix} = \begin{bmatrix} 0 & A_{12} & 0 & 0 \\ A_{21} & 0 & 0 & A_{24} \\ A_{23} & 0 & 0 & 0 \\ 0 & 0 & A_{43} & 0 \end{bmatrix}.$$

By definition of the matrix A , it follows that each endogenous column sum Y_j is given as $Y_j = AY_j + x$, where x is a vector of exogenous demand of i , $\sum_j x_i$. By rearranging the equation, we get $Y_j = (I - A)^{-1}x = Mx$, where I is an identity matrix and M is the multiplier matrix.

The macroeconomic loss due to domestic violence consists of direct and indirect costs. The direct costs account for the loss of income from absenteeism due to violence. The indirect costs account for the additional loss of output from the multiplier effect of the initial income loss. The estimation of the macroeconomic loss including the indirect cost, or the multiplier loss, has recently received attention in the literature (Raghavendra, Duvvury, and Ashe 2017).

The method used in this study differs from the multiplier analysis model used in Raghavendra, Duvvury, and Ashe (2017). First, instead of modifying the labor share of each sector to reflect the loss of earnings, the loss is translated into the loss of household consumption that implicates

the macroeconomic cost through multiplicative linkages between households and productive sectors via consumption and earnings, as well as the linkages among productive sectors. Second, supply constraints are applied to agriculture and mining sectors, as their production critically depends on the available natural resources, such as land and mineral deposits, and these resources are inelastic. Hence, it is unlikely that the sectoral output of these sectors responds to exogenous household demand changes in ways that other sectors could. As a result of the supply constraints, the multipliers associated with the sectors are set to zero.

Therefore, our estimate of the macroeconomic loss is an underestimate in the absence of a major sector like agriculture, where women's workforce participation is significant in Ghana. Costs and availability of necessary data to build a SAM are the main issues in a developing-country case. An elaborate macro SAM requires national economic accounts, international economic accounts, industry input-output accounts, labor force surveys, and income and expenditure surveys. National accounts—including GDP, personal income and outlays, and other aggregate data—are disaggregated by household and industry based on other micro data sources. In the process, macro data from national accounts are to be reconciled with micro survey data to satisfy the double-entry bookkeeping principle. To the extent micro data is available, one can disaggregate the accounts, especially of households. Data requirements can be challenging in many developing countries. Conducting a nationwide survey with adequate frequency can be too costly to undertake and the prevalence of the informal economy and other measurement errors may undermine the accuracy of official data sources. Ghana, however, has been consistent in producing a SAM over the years and we use their 2015 SAM.

4. RESULTS AND DISCUSSION

Violence impacts women's work in diverse ways. In terms of paid market work, violence affects women through absenteeism and presenteeism, where the latter is a measure of not being able to perform while at work. Moreover, violence also affects women's care work performed at home and in the community. The care work at home, mostly performed by women, is an important input for the daily social reproduction of market labor. Therefore, any adverse impact on care

work due to violence would also indirectly impact the market labor offered by other members of the household. Economic theory and policy analysis have so far neglected this aspect, particularly in the context of women's empowerment. Since theory is not fully developed in this regard and there are no known methods for incorporating the unpaid care work of women in the circuit of production, our analysis does not capture the indirect impact of care work missed due to VAWG on a household's paid market labor. We focus mainly on absenteeism and the resultant (direct) loss of income to the women and to the economy as a whole (macroeconomic loss). However, we do estimate the direct loss due to presenteeism, as well as loss due to missed household production and care work from the 2016 women's survey, and we report these results in the following subsections.

4.1 Direct Losses Due to Violence

4.1.1 Direct Income Loss Due to Absenteeism

The proportion of women experiencing violence and the average number of days missed (previously outlined in section 3.1) are translated into the individual loss of earnings based on the size of the employed population and the average earnings estimated from the GLSS's sixth wave. ILOSTAT, the ILO's open access dataset, provides the estimated total number of employed women and men in 2017. The employment figures by area type (rural and urban) also come from ILOSTAT, but the latest information available is for 2015. Assuming the same rural-urban ratios of employed persons in 2017, they are multiplied by the number of employed persons by sex in 2017 in order to impute the size of the employed population by sex and area. The rural-urban ratios are, respectively, 0.47 and 0.53 among employed female workers and 0.49 and 0.51 among employed male workers. The ILO employment estimate for women between 18 and 60 years old in 2017 is 4.76 million, which yields in rural and urban areas 2.31 million and 2.45 million female workers, respectively.

Applying the proportion in table 1 to the ILO-estimated number of workers by area yields over 2.4 million women workers who reported absenteeism due to violence. The accumulated days of absenteeism in turn reaches to slightly more than 40 million days in 2017 (table 6). The lost earnings are calculated as a product of the number of days and the average earnings by sex and area. The estimated average earning from the GLSS's sixth wave are GHC12.8 and GHC20.4 per

day for female employed persons in rural and urban areas. The estimated daily earnings are then adjusted up to 2017 levels using the average consumer price changes between 2012 and 2017 from the IMF.⁹ Total lost earnings are estimated to be over GHC1,237 million (US\$284 million), or 0.6 percent of the current Ghanaian GDP of GHC205.9 billion in 2017.

Table 6. Direct Loss: Absenteeism (working days and earnings)

	Rural	Urban	Row total
Number of victims	1,071,709	1,344,384	2,416,093
Number of days lost	26,803,441	13,537,945	40,341,386
Lost earnings (million GHC)	684	552	1,237
Lost earnings (million US\$)	157	127	284

Source: Authors' calculations.

4.1.2 Direct Loss Due to Presenteeism

Table 7 displays the magnitude of the implicit cost of violence in the form of presenteeism. Over 2.4 million working women report having experienced presenteeism due to violence, which is equivalent to 29 million working days. The implicit value of the compromised productivity amounts to GHC935 million, or 0.45 percent of Ghanaian GDP. The loss in rural areas is GHC414 million, while the loss in urban areas is GHC521 million, despite the fact that the number of days lost in rural areas is higher. The discrepancy is due to the higher average earnings of women in urban areas (GHC40.8) than in rural areas (GHC25.5).

Note that the loss due to presenteeism is implicit in nature, as it is not directly accounted for like absenteeism. In addition, the direct loss estimated in this study is an underestimation, since labor cost is only a part of the total value of the output.

Table 7. Imputed Loss: Presenteeism (working days and earnings)

	Rural	Urban	Row total
Number of victims	1,071,709	1,344,384	2,416,093
Number of days lost	16,225,673	12,771,647	28,997,320
Implicit loss of earnings (million GHC)	414	521	935
Implicit loss of earnings (million US\$)	95	120	215

Source: Authors' estimation from the 2016 women's survey and the GLSS's sixth wave.

⁹ The accumulated inflation is 199.7 percent, with an average annual inflation rate of 14.9 percent during the time period.

4.1.3 Direct Loss Due to Missed Household Production and Care Work

Table 8 shows the implicit value of the loss of unpaid household production and care work due to VAWG (including partner and nonpartner violence). In total, almost 11 million days of women’s household production were lost, which is approximately 0.33 percent of the total household production days (3.3 billion days for women in 2017) with the assumption that such activities are conducted 365 days a year. In terms of monetary value, it amounts to GHC96 million. The losses due to presenteeism and missed household production are an implicit cost of violence. Though the losses are real in terms of lost productivity and quality of life, they cannot be translated directly into macroeconomic costing.

Table 8. Imputed Loss: Household Production (working days and value)

	Rural	Urban	Row total
Number of household production days lost	5,442,321	5,518,876	10,961,197
Lost earnings, imputed (million GHC)	48	49	96

Source: Authors’ estimation from the 2016 women’s survey.

Taking all three dimensions into account, the total direct loss due to VAWG is presented in table 9. The methodological challenges in measuring presenteeism and care work apply to our estimates and to that extent they are indicative of the loss experienced by women due to violence.

Table 9. Overall Direct Income Loss Due to VAWG

Type of loss	Million GHC	Percent of GDP
Absenteeism	1,237	0.60
Presenteeism	935	0.45
Household production and care work	96	0.05
Total direct income loss	2,269	1.10

Source: Authors’ estimation; Ghana’s GDP in 2017 was approximately GHC206 billion.

The total direct loss due to violence is 1.1 percent of Ghanaian GDP in 2017, which is at best the minimum loss to the economy to the extent that both presenteeism and household production and care work are underestimated. While the direct loss is arrived at by aggregating individual losses, it does not include the indirect losses suffered by the rest of the economy owing to the multiplicative linkages that exist between households, businesses, the government, and the foreign sector. We now turn to the estimation of the indirect loss to the economy as whole.

4.2 Indirect Losses: Macroeconomic, Government Revenue, and Sectoral Loss

As noted earlier, the cost of violence is not limited to the income loss to the individual women and their families. The interconnected nature of the economy implies that there is more to the cost that is incurred by the whole economy. For instance, the income loss at the individual household level leads to loss in final demand for goods and services from the household sector as a whole and depresses production in various sectors, which in turn inflicts further losses due to reduced employment opportunities. Therefore, the loss to the economy as a whole should include both the direct income loss to the household sector and the indirect income loss given the linkages in the economy. The indirect loss is called the “multiplier loss” in the literature (Raghavendra, Duvvury, and Ashe 2017).

The direct income loss to women experiencing violence is GHC1,237 million, or 0.60 percent of Ghana’s GDP in 2017. After accounting for the leakages through income taxes and household savings, which together account for 16.5 percent and 31.1 percent of total household expenditure in rural and urban households, respectively, all the remaining income is assumed to be spent on goods and services. Through the multiplicative linkages between net household consumption and the productive sectors, as well as among the productive sectors, the direct income loss in the household sector induces an economy-wide loss, which is the indirect loss of gross domestic production, amounting to GHC708.9 million, or 0.34 percent of GDP (table 4). This is almost 57 percent of the direct cost, or 36 percent of the total cost. In other words, for every GHC1 loss of income to the household due to violence, an additional loss of GHC0.57 is incurred by the rest of the economy. In total, taking both the direct and indirect losses, the macroeconomic loss due to VAWG is estimated to be GHC1,945.7 million, or 0.94 percent of GDP in 2017, not including the costs of presenteeism and lost care work. In other words, Ghana’s national GDP in 2017 could have been 0.94 percent higher in the absence of VAWG.

Table 10. Macroeconomic Loss Due to VAWG, Ghana

	Million GHC	Percent of GDP
Direct income loss	1,236.8	0.60
Indirect income loss	708.9	0.34
<i>Indirect/direct ratio</i>	<i>0.57</i>	
Macroeconomic loss	1,945.7	0.94
Fiscal revenue loss*	157.8	0.49

Note: *Fiscal revenue loss as a percentage of government revenue in 2017.

Source: Authors' calculations.

Furthermore, the direct and indirect losses due to violence also inflict loss on the government's fiscal revenue. While the direct income loss results in the loss of income tax revenue, the indirect loss is the loss of revenue from taxes on sales, imports, and income due to lower production and consumption; the SAM provides detailed accounts of tax payments by other sectors to the government (see table 5). In the case of Ghana, the loss of fiscal revenue due to VAWG amounts to GHC157 million, or 0.49 percent of the government's total tax revenue in 2017.

4.3 Sectoral Loss

Analysis of the sectoral distribution of the multiplier-induced indirect costs highlights the pathways of propagation of VAWG's impact on the overall economy. Table 5 reports the sectoral analysis, showing the impact on the sectors due to VAWG. Note that the supply constraint conditions are applied to agriculture and mining industries, as the sectoral production may be more inelastic than others due to the critical dependence on fixed natural resources, i.e., available land and mineral deposits. Hence it may be necessary to adjust down the potential multiplier effects of these sectors. In this analysis, we set them to zero. With the absence of these sectors in the multiplier analysis, the results should be treated as providing a lower bound for the macroeconomic loss estimates.

For the sectoral analysis, we aggregated the sectors according to type of output. The major sectors in our analysis are food processing, manufacturing, utilities, construction, food service and accommodation, public administration (government), education and health, and the aggregate sector "other services," which includes wholesale and retail trade, transportation and

storage, information and communication, finance and insurance, real estate activities, and business services.

In terms of the sectors that exhibit major losses, the other services sector is the highest, with the loss in output amounting to GHC296.7 million, which corresponds to about 42 percent of the total GDP loss due to VAWG. The food service and accommodation and food processing sectors also incur heavy losses, amounting to GHC110.4 million and GHC103.9 million, respectively, followed by the manufacturing and public administration, health, and education sectors. In addition to output loss in the aggregate sectors, we also estimate the sectoral loss and tax revenue losses, particularly arising from sales tax, and these figures are given in table 11 (the loss by region is given in table 12). While the income loss captures the direct effects of VAWG on women working in these sectors, the sectoral (figure 3) and tax revenue losses (figure 4) represent the indirect effects of violence on the economy.

Table 11. Sectoral Distribution of Indirect Costs, Ghana (million GHC)

	Food processing	Manufacturing	Utilities	Construction	Food service/hotels	Gov't/edu./health	Other services
GDP	103.9	82.1	48.0	7.4	110.4	60.4	296.7
Income	58.1	46.2	24.5	3.6	60.0	42.9	165.4
Tax	42.0	36.0	9.1	0.9	15.9	7.6	43.3

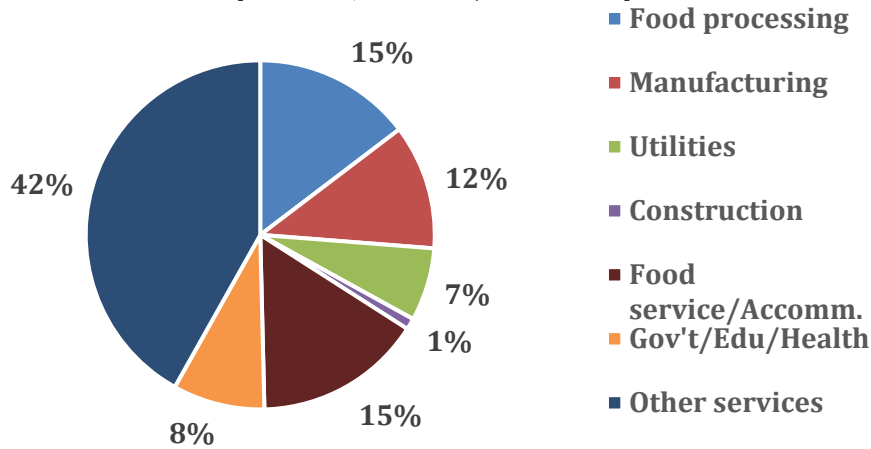
Source: Authors' calculations.

Table 12. Sectoral Distribution of Indirect Costs by Location, Ghana (million GHC)

	Location	Food processing	Manufacturing	Utilities	Construction	Food service/hotels	Gov't/edu./health	Other services
GDP	Rural	63.2	49.8	17.1	4.2	52.2	26.7	164.3
	Urban	40.7	32.3	30.9	3.2	58.2	33.6	132.4
Income	Rural	35.4	28.1	8.7	2.0	28.4	19.1	92.2
	Urban	22.7	18.1	15.8	1.6	31.7	23.8	73.2
Tax	Rural	25.7	21.7	3.2	0.5	7.5	3.4	24.3
	Urban	16.3	14.3	5.9	0.4	8.4	4.2	19.0

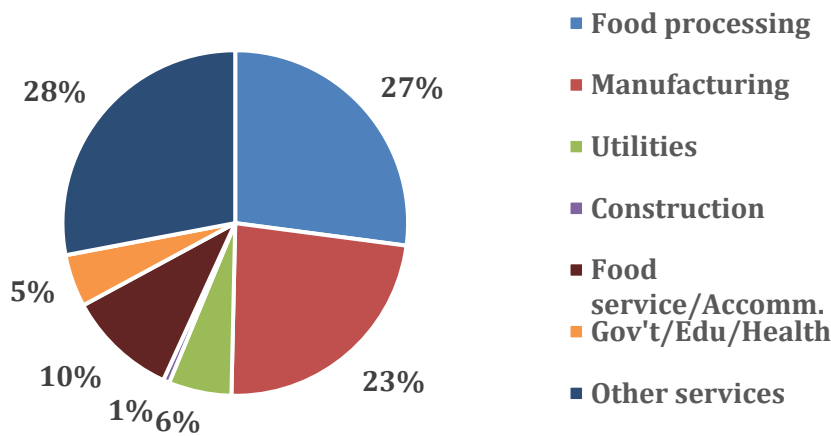
Source: Authors' calculations.

Figure 3. Sectoral Output Loss, Ghana (share as a percent of the total)



Source: Authors' calculations from Ghana's SAM, 2015.

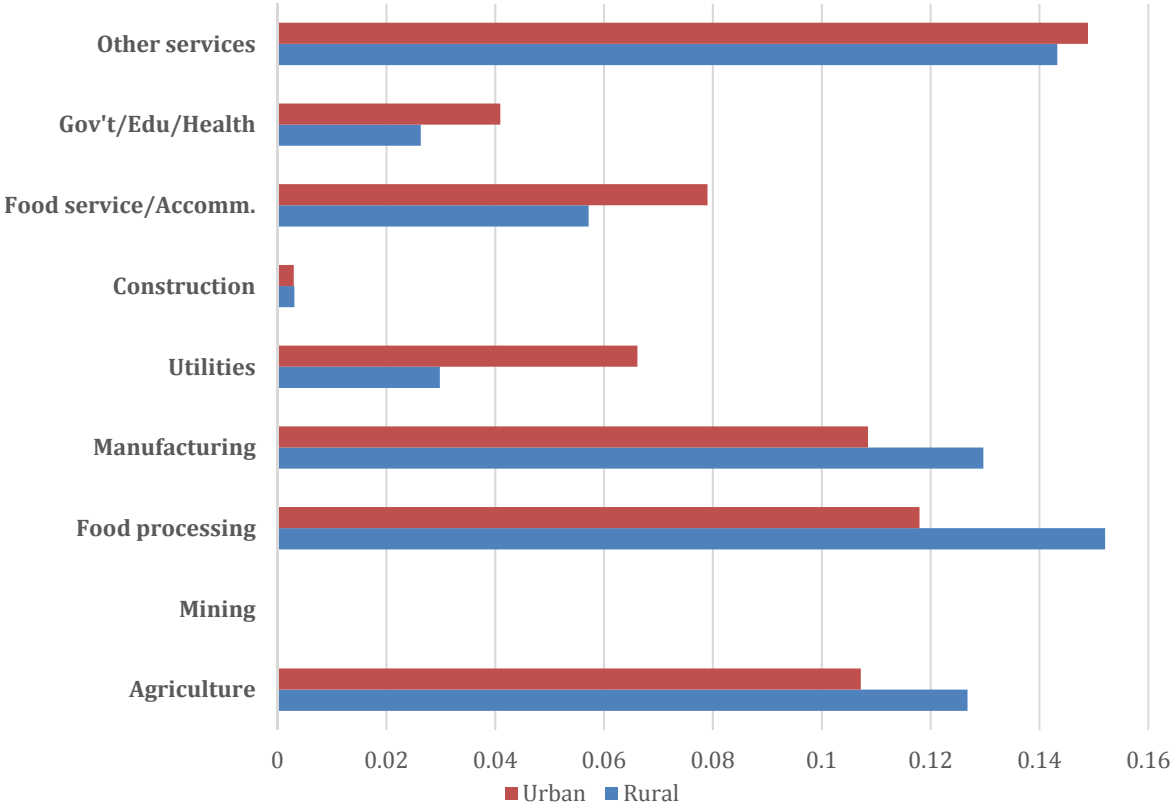
Figure 4. Tax Revenue Loss, Ghana (share as a percentage of the total)



Source: Authors' calculations from Ghana's SAM, 2015.

The main determinants of the sectoral loss are the composition of household expenditure and the sectoral multipliers. The composition shows the first-round impact of the direct loss on sectoral output, and the multipliers determine the subsequent economic impacts given the multiplicative linkages between the sectors. Figure 5 shows the detailed composition of household expenditure in rural and urban areas.

Figure 5. Detailed Distribution of Household Consumption in Rural and Urban Areas, Ghana (ratio to total household expenditure)

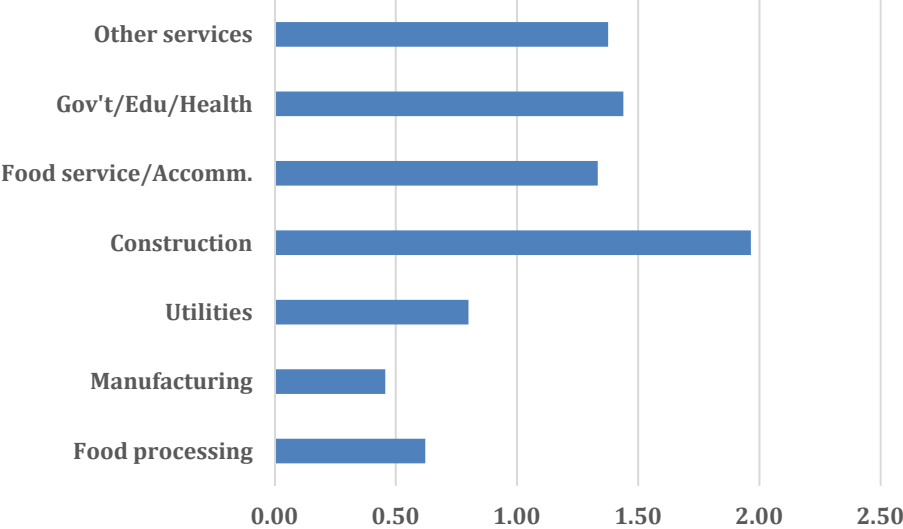


Source: Authors’ calculations from Ghana’s SAM, 2015.

The consumption pattern reveals the dominance of the service sector (“other services”) in both urban and rural areas. Other sectors that exhibit high consumption shares are agriculture, food processing, manufacturing and food service, and accommodation. The intuitive understanding of the sectoral loss becomes clear when the consumption shares are seen together with the output multipliers of the sectors, shown in figure 6. The tax revenue loss follows from the consumption demand pattern and the initial loss of consumption on these items, coupled with relatively high multiplier values for these sectors resulting in a significant loss of income in these sectors, which in turn contributes heavily to the GDP loss. For instance, within the service sector, the category “other services” has a consumption share of about 15 percent and a multiplier value of about 1.35, leading the way in terms of being the largest contributor to output loss in the economy. On the other hand, although food service and accommodation have a lower consumption share

relative to the other services sector, its strong multiplier value makes it the second-largest contributor to the output loss.

Figure 6. Sectoral GDP Multipliers



Source: Authors’ calculations from the Ghana’s SAM, 2015.

4.4 Cumulative Loss to GDP and the Cost of Inaction

Our analysis reveals that the macroeconomic loss due to VAWG is 0.94 percent of Ghana’s 2017 GDP. We can interpret this number as the additional potential income that the economy could have earned in the absence of violence, i.e., it gives an indication of the potential GDP. As discussed above, this estimate should be taken as the lower bound due to the exclusion of supply-inelastic sectors, such as agriculture, and also due to the exclusion of various other costs, such as costs to businesses. Furthermore, the cost to the government in terms of revenue loss due to VAWG is 0.49 percent of total government revenue in 2017; in other words, the potential additional revenue that the government could have earned in the absence of violence is 0.49 percent of the actual total revenue.

Note that these are costs to the economy in spite of the existing level of service provision for the women survivors of violence and is a permanent “leakage” from a macroeconomic point of view. The size of the leakage is the difference between what the economy could have earned in the

absence of violence, i.e., the *potential* GDP and *actual* GDP. While our estimates are derived at a single point in time, primarily due to the lack of longitudinal data on VAWG and also the availability of SAMs, the full extent of the leakage, or the *cost of inaction*, can be seen from the cumulative costs to the economy due to violence over time.

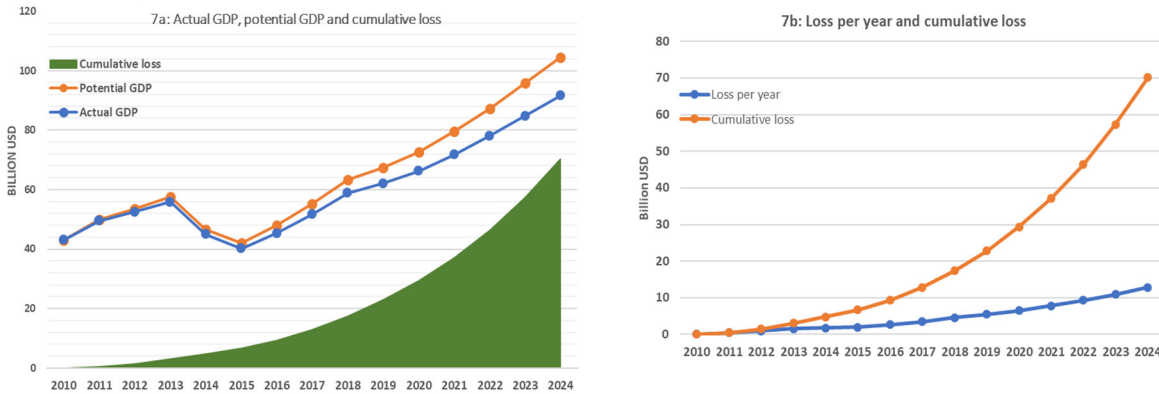
Using the actual and predicted GDP data for Ghana from 2010 to 2024 provided by the IMF's (2019) *World Economic Outlook*, we estimated the cumulative cost to Ghana's economy over a period of time.¹⁰ Assuming the GDP loss due to VAWG remains at 0.94 percent, we estimate the potential and cumulative GDP losses to the Ghanaian economy in figure 7. Figure 7a shows the actual and potential GDP for the period and figure 7b shows both the loss per year and the cumulative loss due to violence. As can be seen from the figures, even under the assumption of constant loss due to violence, the difference between the potential and actual GDP widens due to the compounding effect.¹¹ If one looks at the loss per year in figure 7b, starting from a trivial 0.94 percent of GDP in 2011, it slowly begins to increase and reaches to about US\$12.81 billion or about 14 percent of projected GDP in 2024. Similarly, the cumulative GDP loss over a 14-year period, say between 2010 and 2024, grows to about US\$70 billion, which is equivalent to 77 percent of projected GDP in 2024. In other words, the cumulative loss due to 14 years of no further action to reduce or prevent VAWG (the cost of *inaction*) could be up to three-quarters of the GDP in 2024.¹²

¹⁰ See table A.4, appendix 3, for the derived estimates of potential GDP and cumulative loss.

¹¹ See appendix 2 for the derivation of potential GDP.

¹² Although it is not correct to show both the stock (GDP) and flow (cumulative loss) in the same figure (figure 7a), the figure is presented to provide a visual aid for the reader to see that the cumulative loss for the period 2010–24 becomes almost three-quarters of 2024 GDP. We thank the reviewer for this point.

Figure 7. (a) Actual and Potential GDP in Ghana, and (b) Cumulative Loss to GDP (in billion US\$)



Source: Authors’ calculations. The actual and the projected GDP figures are inflation adjusted and normalized.
Source: IMF (2019)

Furthermore, we can also estimate violence’s costs to economic growth. Since the difference between the potential and actual GDP is the income needed to offset the loss to GDP due to violence, we can now pose the question in growth terms. For a given loss of GDP, what is the rate of growth an economy must achieve in order to sustain itself at its potential over a period of time? Or in other words, what factor should be applied to the actual rate of growth for the economy to reach its potential GDP growth rate? This factor could be interpreted as the *growth premium*, as it shows how much additional growth relative to the actual growth could have been achieved by an economy for it to grow at its potential. It is calculated as:¹³

$$\frac{PGDP_k - PGDP_{k-1} / PGDP_{k-1}}{AGDP_k - AGDP_{k-1} / AGDP_{k-1}} = 1 + \frac{l(1+g)}{g}$$

where g is the actual GDP growth and l is the percentage loss of GDP due to VAWG.

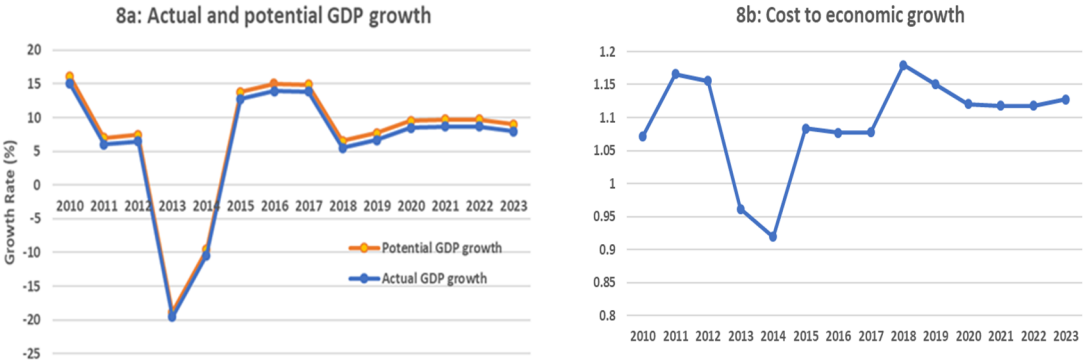
Using the actual and projected GDP growth rates between 2011 and 2024 for Ghana, we estimated the cost premium for the Ghanaian economy, shown in figures 8a and 8b. Figure 8a displays Ghana’s actual growth rates between 2011 and 2024, published in the IMF’s (2019) *World Economic Outlook*. The right-hand panel, figure 8b, displays the factor values, or the cost premium that the actual growth rate should be multiplied by to get the potential growth rate for

¹³ See appendix 3 for the derivation of the growth premium.

the corresponding period. To interpret these values, let us consider a few cases in figure 8b. In 2012, Ghana’s actual growth rate was reported to be 6.01 percent. The factor value for 2012 is 1.1656, which indicates that the Ghanaian economy should have achieved an additional 17 percent of the actual growth rate (i.e., 7.01 percent) in order to nullify the GDP loss due to violence.

Similarly, in 2019, Ghana’s actual growth rate is predicted to be 5.51 percent. The factor value of 1.1797 indicates that the Ghanaian economy should grow at an additional 17 percent of the actual growth rate (i.e., 6.50 percent) in order to offset the GDP loss due to violence. Figure 8b shows that in those years when the Ghanaian economy slowed down, the downturn could have been less severe in the absence of violence, which is indicated by the multiplicative factor being less than one. Therefore, even with the assumption of a constant GDP loss, the growth premium imposed by violence varies relative to the actual growth rate—the lower the growth, the higher the cost premium and vice versa.

Figure 8: (a) Actual and Potential Growth Rates and (b) Cost Premium to Growth



Source: Authors’ calculations.

5. CONCLUSION

Violence against women and girls (VAWG) is a widely recognized human rights violation with serious consequences for the health and well-being of women and their families. Since the issue has so far been seen as a problem happening in the “private” sphere of the household, its wider ramifications for businesses, the economy, and society are not well explored. Even while the

issue of VAWG is now explicitly incorporated into the global development policy agenda via the UN 2030 Sustainable Development Goals (United Nations General Assembly 2015) translating this commitment to concrete policy action on VAWG, particularly in a context where economic reasoning weighs more than all other considerations, remains a challenge. In this paper, we develop a comprehensive analytical framework to estimate and articulate the ramifications of VAWG on the wider macroeconomy.

One of the main contributions of this paper is to provide a framework for viewing the issue of VAWG in the context of the macroeconomic circular flow and integrate it into the conventional multiplier analysis. To that extent, our analysis has pushed the boundaries of the existing methods in the costing literature and enabled us to translate the micro-level income loss due to VAWG into the total macroeconomic loss to the economy. Our analysis reveals that the overall economic loss due to VAWG is 0.94 percent of the 2017 GDP in Ghana. The loss to the economy can also be seen as the potential income that would have been gained in the absence of violence. Since the loss due to VAWG goes unnoticed and is encapsulated in the economy's actual GDP, this loss is a permanent and invisible "leakage" from the macroeconomic circular flow. Moreover, given that the losses due to VAWG are estimated at the existing level of provisioning for protection, prosecution, and prevention services, the cost of no further action (i.e., the cost of *inaction*) has implications for economic growth. Under the status quo scenario, our estimates suggest that the cumulative GDP loss over the 14-year period between 2010 and 2024 is about US\$70 billion, or equivalent to 77 percent of the projected Ghanaian GDP for 2024. Our analysis also quantified the rate of growth an economy must achieve in order to sustain itself at its potential over a period of time for a given loss of GDP. In the case of Ghana, the *growth premium* that VAWG imposes is about 17 percent of the actual growth rate in 2019. Or simply put, the Ghanaian economy should grow at 6.5 percent, as opposed to the predicted growth of 5.5 percent in 2019, to offset the losses due to VAWG and reach its potential growth rate. Thus, our analysis shows that the loss due to VAWG is not a one-off leakage from the circular flow, but imposes a premium on growth by demonstrating how far the actual growth rate of the economy is below its potential growth rate when the economy is growing and by how much the actual growth is worse off relative to its potential when the economy is shrinking or in recession.

The loss would be even higher if we could have included a wider range of the costs of violence, such as those on capabilities via chronic pain and suffering of women survivors or the intergenerational impact on children and their human capital development. However, estimation of such impacts requires development of analytical frameworks that enable the incorporation of VAWG's intergenerational impact and study its implications for permanent growth effects in human capital growth models. This is particularly relevant in the context of the emerging global development discourse on violence in general (including that of armed conflict), and attempts to integrate its impact in formal economic analysis.

In this paper we provided one way to study the impact of VAWG within the structures of formal economic analysis. The framework developed here enables us to see that VAWG, which is often dismissed as a private matter, inflicts a permanent, yet invisible, drain on the economy. If it continues to be ignored, it has far reaching implications for long-run economic growth and development.

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APPENDIX 1: SAMPLE STUDIES OF COSTING

Sample studies using different approaches to estimate the costs of intimate partner violence (IPV), drawn from Ashe et al. (2016), are presented below.

Table A1. Sample Studies Based on Accounting Approach

Author	Country	Cost	Cost categories
International Center for Research on Women (CRW) (2009)	Uganda Morocco Bangladesh	US\$5 in Uganda ^a US\$157 in Morocco ^b US\$5 in Bangladesh ^c	health; police; justice; local informal authority; social services
National Council to Reduce Violence Against Women and Their Children (NCRVAW&C) (2009)	Australia	AU\$13.6 billion in 2009 AU\$15.6 billion (estimated for 2021–22)	pain and suffering; health; production; consumption; administrative and other; second generation; transfers.
Zhang et al. (2012)	Canada	CA\$7.4 billion	medical attention; hospitalization; lost wages; lost productivity; missed school days; stolen/damaged property; judicial costs.
Duvvury et al. (2012)	Vietnam	US\$1.41 billion (out-of-pocket expenditure and missed work) US\$2.26 billion (productivity loss)	medical; police; court; shelter; legal aid; foregone earnings; productivity loss.

Notes: ^a cost for health service; ^b cost for justice services; and ^c cost for informal mediation service

Source: Authors' own based on the review of literature.

Table A2. Sample Studies Using Econometric Approach

Author	Country	Econometric technique	Relationship	Central finding
Lloyd (1999)	United States	Multivariable logistic regression	Female labor force participation	No relation.
Morrison and Orlando (1999)	Chile and Nicaragua	Multivariable logistic regression	Female labor force participation	No relation; but the authors note that other countervailing factors that influence the results and cause simultaneity issues between violence and participation.
Heath (2012)	Bangladesh	Probit regression model	Female labor force participation	Positive correlation between female labor force participation and experience of domestic violence is found.
Duvvury et al. (2012)	Vietnam	Two-step regression	Earnings	Vietnamese women experiencing violence earn 35 percent less than those not abused.
Hindin et al. (2008)	Bangladesh, Bolivia, Dominican Republic, Haiti, Kenya, Malawi, Moldova, Rwanda, Zambia, and Zimbabwe	Multivariable logistic regression	Physical health	Alcohol consumption by the husband/partner and exposure to inter-parental violence are found to be risk factors.
Parish et al. (2004)	China	Multinomial logistic regression	Reproductive health	Significant risk factors for partner violence include sexual jealousy, patriarchal beliefs, low female contribution to household income, low male socioeconomic status, alcohol consumption, and residence in regions other than the south or southeast.
Meekers et al. (2013)	Bolivia	Probit regression model	Mental health	Exposure to physical and sexual violence increases likelihood of experiencing many forms of mental health disorders.
Ishida et al. (2010)	Paraguay	Multivariable logistic regression	Mental health and suicide	IPV is independently associated with an increased risk for common mental disorders and suicidal ideation as measured by the SRQ-20.
Avanci et al. (2013)	Brazil	Binary logistic regression		Women victims of severe physical violence by their partner were more likely to suffer from mental health problems than those never exposed to this type of violence.

Source: Authors' own based on the review of literature.

Table A3. Sample Studies Using Propensity Score Matching Method and Other Methods

Author	Country	Impact variable	Key finding
Ribero and Sánchez (2004)	Colombia	Women's employment	Unemployment rates that were 8 percent higher.
Vyas (2013)	Tanzania	Women's earnings	Abused women earn less than nonabused women.
Morrison and Orlando (2004)	Peru, Haiti, and Zambia	Women's health	More likely to experience many reproductive health issues.
Morrison and Orlando (2004)	Peru, Haiti, and Zambia	Children (their health and education)	More likely to suffer diarrhea and anemia, and be shorter in height in Peru. Children of women victims in Peru were found to be more likely to attend school and less likely to be behind in school.

Source: Authors' own based on the review of literature.

APPENDIX 2: POTENTIAL GDP

Let $AGDP$ and $PGDP$ represent the actual GDP and the potential GDP, respectively. The time index is denoted by the subscript. Assume that in the initial year (in our case, 2010) the actual and potential GDP are equal, thus:

$$PGDP_0 = AGDP_0$$

For the next period, the potential GDP is calculated as:

$$PGDP_1 = PGDP_0(1 + g) * (1 + l) = AGDP_0 * (1 + g) * (1 + l)$$

where g is the actual GDP growth and l is the percentage loss of GDP due to VAWG.

Iterating forward to the next period:

$$PGDP_2 = PGDP_1(1 + g) * (1 + l) = AGDP_0 * (1 + g)^2 * (1 + l)^2,$$

and to the k^{th} period yields,

$$PGDP_k = AGDP_0 * (1 + g)^k * (1 + l)^k \quad (1)$$

In (1), if $l = 0$, i.e., when there is no loss due to VAWG, then the potential GDP is equal to the actual GDP. For instance, the potential GDP in k^{th} period:

$$PGDP_k = AGDP_k = AGDP_0 * (1 + g)^k$$

The GDP loss due to violence is simply the difference between the potential and actual GDP. For instance, the GDP loss in the k^{th} period is given by:

$$PGDP_k - AGDP_k = AGDP_0 * (1 + g)^k * [(1 + l)^k - 1] \quad (2)$$

The potential output in any given year is the potential GDP in the previous year times the GDP growth rate plus the additional amount of income that could have been earned in the absence of violence. The GDP loss due to violence is the difference between the potential output and the actual output for any given year. The cumulative loss over the period is calculated by compounding the yearly difference between the potential output and the actual output for the period. Note it is not the difference in any given year, but an accumulated loss over the period. From (1) and (2), it can be seen that even a 1 percent loss due to violence at a point in time can lead to a larger cumulative loss due to the accumulated growth effect.

APPENDIX 3: GROWTH PREMIUM

The growth premium is the ratio of relative change in the potential GDP to the relative change in the actual GDP and is calculated as follows.

The actual GDP for the given period is $AGDP_k = AGDP_{k-1}(1 + g)$, where g is the growth rate and the relative change in the actual GDP yields:

$$\frac{AGDP_k - AGDP_{k-1}}{AGDP_{k-1}} = g$$

The potential GDP for a given period is $PGDP_k = PGDP_{k-1}(1 + g)(1 + l)$, where l is loss due to violence and the relative change in the potential GDP is:

$$\frac{PGDP_k - PGDP_{k-1}}{PGDP_{k-1}} = g(1 + l) + l$$

The growth premium (i.e., how much additional growth relative to the actual growth that could have been achieved by an economy for it to grow at its potential) is calculated as:

$$\text{Premium} = \frac{PGDP_k - PGDP_{k-1} / PGDP_{k-1}}{AGDP_k - AGDP_{k-1} / AGDP_{k-1}} = 1 + \frac{l(1 + g)}{g}$$

Table A4. Potential GDP, Cumulative Loss, and Cost Premium Estimation: Ghana (billion US\$)

	Ghana, actual and projected GDP (inflation adj)	Percent loss of GDP	Actual GDP growth rate	Potential GDP (PGDP)	PGDP growth rate	Loss/year	Cumulative loss	Growth premium
2010	43.04	0.94		43.04		0.00	0.00	
2011	49.51	0.94	15.03	49.98	16.12	0.47	0.47	1.07
2012	52.49	0.94	6.01	53.48	7.01	0.99	1.46	1.17
2013	55.88	0.94	6.45	57.47	7.45	1.59	3.05	1.16
2014	44.93	0.94	-19.59	46.64	-18.83	1.71	4.76	0.96
2015	40.24	0.94	-10.45	42.16	-9.61	1.93	6.69	0.92
2016	45.37	0.94	12.75	47.99	13.81	2.62	9.31	1.08
2017	51.66	0.94	13.88	55.16	14.95	3.50	12.80	1.08
2018	58.80	0.94	13.82	63.37	14.89	4.57	17.37	1.08
2019	62.05	0.94	5.52	67.50	6.51	5.45	22.83	1.18
2020	66.19	0.94	6.68	72.69	7.69	6.49	29.32	1.15
2021	71.81	0.94	8.48	79.59	9.50	7.78	37.10	1.12
2022	78.05	0.94	8.69	87.32	9.71	9.27	46.37	1.12
2023	84.80	0.94	8.65	95.76	9.67	10.97	57.34	1.12
2024	91.53	0.94	7.94	104.34	8.96	12.81	70.15	1.13

Source: Authors' own calculation using the actual and forecast GDP data for Ghana from IMF (2019)