


# Violence against women and the macroeconomy: The case of Ghana

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## Abstract

Violence against women (VAW) is a widely recognized human rights violation but whose wider economic ramifications are less understood. In this article, applying the multiplier analysis based on 2015 social accounting matrix of Ghana, we outline how the individual microlevel income loss is translated to a macroeconomic loss. We argue that the macroeconomic loss due to VAW, which amounts to about 0.94% of Ghanaian GDP, is not a once-off loss but a permanent *invisible* leakage from the circular flow of the economy. The article highlights the potential consequences of the loss over a period of time in the status quo scenario.

## KEYWORDS

absenteeism, consumption loss, economic growth, feminist economics, social accounting matrix, violence against women

## 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 discourse. *First*, fertility decline is a key driver for economic growth and economic development (Barro, 1991; Bloom & Canning, 2008; Karra et al., 2017; Schultz, 2005). *Second*, improved health plays a crucial direct and indirect role in promoting economic growth (Bloom et al., 2004; Kalemili-Ozcan et al., 2000). *Third*, education is a central driver for economic development via its impact on increase in skilled labour force and expanded capabilities (Breton, 2013; Dreze & Sen, 1996;

Monteils, 2004). These stylized facts underlie the traditional models of growth, such as Solow's model, which places equal emphasis both the quantity and quality of labour.

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 (Braunstein et al., 2020; Elson, 1995; Elson & Cagatay, 2000; Seguino, 2019). While it is recognized that the gendered impacts of development further reinforce the gender division of labour, there is little attention on the impacts of the key levers through which gender norms are sustained at the level of household and in the community and their impact on the main drivers of development. Violence against women (VAW) is one of the key levers that sustain gender norms, and there has been limited attention on its interaction and impact on the economy especially using economic bargaining models at the level of the household. The central argument of these models is that employment strengthens the fallback position of women in cooperative and non-cooperative bargaining model. In other words, earnings increase economic bargaining power and thus reduce violence (Bhattacharya et al., 2011; Oduro et al., 2015; Panda & Agarwal, 2005; Tauchen et al., 1991). However, these models do not consider the impact of violence on women's ability to maintain employment (lower productivity, absenteeism and interrupted work history) and thus limiting effective bargaining power of women. The relationship between partner violence and employment is empirically indeterminate with women's employment associated with lower past year partner violence in Egypt and Haiti and with higher violence in India, the Dominican Republic and Nicaragua (Gage, 2005; Kishor & Johnson, 2004; Naved & Persson, 2005).

Moreover, women also experience violence in the family, workplace and public spaces. Equally, there is growing empirical evidence on the impact of violence on physical and mental health, reproductive health outcomes of women, well-being of children and household members, employment and income loss and loss of earning potential for the victims of violence (Bacchus et al., 2018; Vyas, 2013; World Health Organization [WHO], 2013). However, despite this empirical evidence, the issue of VAW remains outside the scope of the representative rational agent macroeconomic policy models. This raises serious concern for the implementation of the SDGs, especially Targets 5.2, 5.4 and others, because macroeconomic policies are entrusted to be the enablers of SDGs in countries around the world. Therefore, it is important to integrate the issue of gender-based violence in the standard macroeconomic framework and develop policy models that would help articulate gender-sensitive macroeconomic and development policies.

In this article, we develop an analytical framework to study the economy-wide impact of VAW for the case of Ghana. Using both the primary data on prevalence, intensity and impact of violence collected using an extensive field survey and secondary data on labour market and structural linkages, we estimate the macroeconomic loss due to VAW for Ghana. The article is organized as follows: the next section provides an overview of the costing literature and discusses our point of departure from the existing studies. The data and methods used in the estimation are discussed next, followed by a discussion of the main results of our analysis. The conclusion section draws on the analysis and highlights the potential policy implications of the results.

## 2 | APPROACHES TO COSTING VAW

Meta reviews of costing studies (Day et al., 2005; Duvvury et al., 2013; Morrison & Orlando, 2004; Walby & Olive, 2014) have identified several distinct methodologies to cost VAW including 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 intangible costs, including costs of pain, suffering and/or loss of quality of life, in high-, middle- and low-income countries due to violence. Two studies that laid the groundwork for later costing studies are the Access Economics study in Australia (Access Economics, 2004) and the Walby (2004) study in England. Both these studies estimated *national aggregate cost of intimate partner violence (IPV)* in terms of costs of

service provision, welfare transfers by the state for survivors of IPV, loss of earnings due to pain and suffering and loss of output due to absenteeism. However, neither study focused on the wider macroeconomic impact of IPV and its implications for the growth of the economy.

In the literature, depending on the methodology or mix of methodologies employed, studies have identified costs ranging from expenditures by survivors for services to treat or mitigate the health and psychosocial impacts of violence (Bacchus et al., 2018; Duvvury et al., 2012; WHO, 2013) and to opportunity costs in terms of the impacts on human capital, work and productivity (Chadha et al., 2020; Moe & Bell, 2004; Reeves & O'Leary-Kelly, 2007; Sabia et al., 2013).

For example, Zhang et al. (2009), primarily using an accounting methodology, estimated the economic impact of spousal violence in Canada in 2009 at CAD\$7.4 billion (or CAD\$220 per person), which translates in USD \$6.8 billion (or USD\$204 per person). In the estimation, three categories of cost were included: the impact borne by the justice system, by primary victims and by third parties and others. Justice system (both criminal and civil) impacts included the costs of legal aid, police and courts and divorce and separation costs. Primary victim costs included physical and mental health care costs, productivity loss, personal costs and intangible victim costs (i.e., pain and suffering and loss of life). Finally, third party and other costs included the 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 using. This study examined the difference in women's weekly earnings from formal waged work and nonagricultural self-employment using data from the 2008–2009 Tanzania National Panel Survey. The main result was that abused women earned less than nonabused women, with the greatest loss experienced by women in formal waged work and by women in urban areas. This equated to an estimated productivity loss of 1.2% of Tanzania's GDP. Other studies suggest abused women have higher absenteeism due to poor physical and mental health, lower productivity via tardiness and work distraction and greater likelihood of employment instability among survivors of violence (Crowne et al., 2011; Sabia et al., 2013).

Other studies have employed 'contingent valuation' methodology to capture intangible costs of pain and suffering. Walby and Olive (2014) used a 'burden of disease' methodology, estimating the cost of 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 in England. Extrapolating these unit cost findings, the aggregate cost of physical and emotional impact of IPV across the EU 27 countries was estimated at EUR€7 billion, of which 91% was due to IPV against women.

To summarize, the existing approaches for estimating the economic cost of VAW simply aggregate the specific monetary costs arising at an individual level. However, in the context of advocating for governments to invest in service provision for women affected by violence, and in preventing VAW, it is important to highlight potential gains to the overall economy as it is the macroeconomic constraints that dictate budget allocation to various social welfare programmes. Notwithstanding the moral dilemma of reducing the issue of VAW in monetary terms, the practical policy imperative necessitates the drive to find arguments to put the issue central to economic policy making. One of the reasons why the issue of VAW has not entered the macropolicy discourse is the lack of quantitative translation of the individual specific microlevel costs that lead to the overall macro loss to the economy. The aim of this article is to fill this gap by extending the framework articulated by Raghavendra et al. (2017) and to provide quantitative estimates of the macroeconomic loss due to VAW. An important caveat to our study is that the costs of service provision have not been included in our analysis for two reasons. First, in majority of low- and middle-income countries, service availability is fragmented, and spending on specialized services is largely financed by donors than national governments (Le et al., 2019). Second, the help seeking by survivors is rare with most national studies indicating that less than 10% of survivors seek formal services (Asante et al., 2019; Fidan, 2017). Also, the loss of unpaid work at home is not accounted for in this study. Despite the bulk of the work is carried out by women, the valuation of unpaid work without affordable access to market substitutes is still at an exploratory stage, and hence, its multiplicative effects may be speculative, at best.

We undertake this study in Ghana, a growing lower middle-income country that made significant strides in terms gender equality standing at 59 out of 144 countries in 2016 as per the Global Gender Gap Index (World Economic Forum [WEF], 2016). In the area of economic participation and opportunity, Ghana had a higher rank of 10 among all 144 countries, highlighting the traditionally high participation of women in economic activity in Ghana and a lower gender gap in labour force participation. According to the 2015 Labor Force Survey by the Ghana Statistical Service (GSS, 2015), women's labour force participation rate is 64.6%. 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, Ghana continues to be a highly patriarchal society with high levels of VAW. According to the 2008 Ghana Demographic and Health Survey, which is a nationally representative survey, 39% 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 IFC Macro, 2009). The same survey reported that 35%, or one-in-three married women in Ghana have experienced emotional, physical or sexual violence by their partner in the last 12 months. These socio-economic conditions of the country provide a relevant background for this study.

### 3 | DATA AND ESTIMATION METHODS

#### 3.1 | Data availability

The data that support the findings of this study are available at <https://doi.org/10.7910/DVN/RU1X7W> (Duvvury et al., 2019).

#### 3.2 | Estimation of the direct income loss

The estimation of direct income loss is based on primary data from a nationally representative household survey conducted in 2016 of 2002 women aged 18–60 across the 10 provinces of Ghana on experiences of violence including IPV, violence in the family, violence at the workplace and violence in public spaces (or referred to as any violence in this article). The survey collected key demographic data (age, marital status, education and employment), socio-economic status, experiences of violence, health impacts, out of pocket expenditures for seeking help and impact on economic activity (paid and unpaid). In particular, the survey provided data on three work related impacts—absenteeism, presenteeism and unpaid household production and care work. In this article, only missed days of work (i.e., absenteeism) are considered in the analysis. Absenteeism days were calculated on the basis of an analytical method developed by Vara-Horna (2014, 2015) based on review of management literature and used in his study on costs of IPV to businesses in Peru and Bolivia.<sup>1</sup> In this method, all women who reported engaging in economic activity were asked the number of days of work they missed (absenteeism) due to a range of reasons in the past 4 weeks.<sup>2</sup> The total days reported as missed for the past 4 weeks were calculated and scaled up to the past 12 months. Then, difference in the days of absenteeism reported by those who experienced violence and those who did not was then used to estimate the total days of absenteeism due to violence (Duvvury et al., 2020). As the survivors and nonsurvivors had similar socio-economic characteristics, the mean difference in absenteeism days were tested using non-parametric Mann–Whitney *U* test.

To derive the national estimate of the days of absenteeism due to violence, the national employment rate among women in rural and urban locations, the survey data on prevalence of any violence among working women by location and the missed days of work (absenteeism) by location were used. The national estimate of the

<sup>1</sup>Detailed explanation of the method and scales is provided in Asante et al. (2019) available at [www.whatworks.co.za](http://www.whatworks.co.za).

<sup>2</sup>The reasons for absenteeism included seeking health care for the survivor and/or children as well as time for addressing legal issues or not having sufficient money for transport. A caveat to the method is that the calendar timing of the 4-week reference period may result in an overestimate or underestimate based on specific seasonal cycles in the country.

number of all working women in rural and urban areas was derived using the ILOSTAT data for gender disaggregated employment rates by location. This estimate of working women by location was then multiplied by the prevalence rate of violence among working women, based on the primary survey, to estimate the number of working women experiencing violence. To obtain estimate of national days of absenteeism due to violence, this estimate of working survivors of violence was multiplied with the mean difference in days absenteeism derived from the primary data (explained above). Earnings data of women from the 2012–2013 Ghana Household Living Standards Survey, and adjusted for inflation from 2012 to 2017, were used to monetize the national estimate of missed days of work due to VAW.

### 3.3 | Estimation of the indirect loss

As discussed previously, one of the limitations of the costing studies in the literature is that they do not consider further implications of the direct income loss due to VAW to the economy—income loss estimates stop at the level of the household. But in a circular economy, the structural linkages between sectors of production transmit shocks from one sector to other sectors depending on the strength of the sectoral linkages. In our case, the income loss due to VAW to the household sector would be transmitted to other sectors and thereby inflicts an ‘indirect’ loss to the economy. The idea that the loss due to VAW would have multiplier effects in the economy is not new (see Buvinic et al., 1999), and it was first operationalized by Raghavendra et al. (2017) using the social accounting matrix (SAM) for Vietnam.

The SAM is a double-entry table that depicts accounts of economic agents—households, firms and government—that engage in market transactions and transfers. It provides a framework for linking macroeconomy with mesoeconomic and microeconomic activities, in particular of households. The disaggregation of national accounts using household surveys augments the distributional and social dimensions to the matrix and thus allows one to see how total income is distributed across factors and households.

Using the direct loss of income from absenteeism due to violence, we quantify the indirect costs arising from the loss of consumption demand and the consequent multiplicative loss via sectoral linkages, in other words, an opportunity cost of the violence. Together, both the direct and indirect losses of income provide the overall economic loss, that is, the macroeconomic loss due to VAW.

We use the 2015 SAM for Ghana developed by International Food Policy Research Institute (IFPRI), Institute for Statistical, Social and Economic Research (ISSER) and the Ghana Statistical Survey (GSS) for estimating the indirect loss due to violence. We adapt the method used in Raghavendra et al. (2017) in the following way: First, instead of modifying the labour share of each sector to reflect the loss of earnings, we study the loss of consumption in the household sector and the consequent impact on the sectors via the production linkages. Second, supply constraints are applied to agriculture and mining sectors, as the production depends critically on the available natural resources, such as land and mineral deposits and these resources are inelastic. Hence, it is unlikely that the sectoral outputs of these sectors respond to short-run exogenous changes of household demand 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 work force participation is significant in Ghana. The intuition behind our estimation is explained using a schematic Ghana SAM in Appendix A.

## 4 | RESULTS AND DISCUSSION

The IPV is the most recognized form of VAW in the literature. However, violence is also 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 VAW by both the partner

**TABLE 1** Incidence of VAW

	Any violence (% of working women)
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 Ghana 2016 field survey.

**TABLE 2** The number of missing paid workdays due to violence: absenteeism

Location	Experienced any violence	Did not experience violence	Difference	Test value (Z) <sup>a</sup>	Significance
Rural	42.53	17.52	25.01	-3.36	0.001
Urban	29.92	19.85	10.07	-3.527	0

<sup>a</sup>The Mann-Whitney test was used to establish the statistical significance of difference in means between those experiencing and not experiencing violence.

Source: Authors' estimation.

and nonpartners. Violence experiences impact on women's work via absenteeism, presenteeism or being less productive at work and/or inability to undertake unpaid care work. In this paper, we consider only the loss of income as a result of absenteeism as it is unambiguous to measure directly, while the loss of productivity at work and of care work can only be imputed at best.

#### 4.1 | Direct income loss due to absenteeism

As discussed above, the macroeconomic cost of VAW consist of direct and indirect loss of income. The direct income loss is a tractable loss of earnings due to missed days of paid work, that is, absenteeism. Violence inflicts physical and psychological harms that can prevent women from engaging in paid work. Using the field survey conducted in Ghana, we first estimate the number of missed workdays of women in rural and urban areas as a result of VAW.<sup>3</sup>

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

Table 2 displays the average number of missing paid workdays among the victims of violence and among those who did not experience violence and 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, whereas women not experiencing violence missed on average 17.52 days of paid work. The difference in the number of missing days of paid work between the two groups is 25.01 days, which provides an estimate of the days of absenteeism due to VAW. Similarly, among women in urban area, the difference is 10.07 days. Note that the difference is larger among rural women than urban women, which may be indicative that women in urban sector may have less flexibility to miss work.

<sup>3</sup>In Ghana, the Labour Law of 2003 clearly specifies the annual leave benefits (15 days) for employees in registered companies. However, in terms of sick leave allowance, the number of days is not specified. In the women's survey, women employees did not specify if their missed workdays were paid by the employer. Also, majority of working women were in self-employment or were family contributing workers (81% of all women workers as per 2015 Labour Force Survey by the Ghana Statistical Service). In this context, the reported missed workdays were treated as being unpaid.

**TABLE 3** Direct loss of 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	1237
Lost earnings (million USD)	157	127	284

Source: Authors' calculations.

In terms of valuation, the value of the missing days is determined using the average daily earnings of employed women, aged 18–60, in rural and urban areas. Using the Ghana Living Standard Survey (2012–2013) and adjusting for inflation to 2017<sup>4</sup> level, we estimate the average daily earnings for women in rural and urban areas to be GHC 25.5 and GHC 40.8, respectively. Then, the direct income loss due to absenteeism is simply a product of the estimated daily earnings and number of missed paid workdays.

The proportion of women experiencing violence and the average number of days missed are translated into aggregate loss of earnings based on the size of employed population and average earnings estimated from the Ghana Living Standards Survey (GLSS) sixth wave. The ILOSTAT provides the estimated total numbers of employed women and men in 2017. The employment figures by area type (rural and urban) also come from the ILOSTAT, but the latest information 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 employed population by sex and area. The rural–urban ratios are 0.47 and 0.53 among employed female workers, and 0.49 and 0.51 among employed male workers. The ILOSTAT 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 and 2.45 million female workers.

Applying the proportion in Table 1 to the ILOSTAT estimated number of workers by area, it yields over 2.4 million women workers who reported absenteeism due to violence. The accumulated days of absenteeism in turn reach to slightly more than 40.34 million days in 2017 (Table 3). The estimated average earnings from the GLSS sixth wave adjusted for inflation (using the average consumer price changes between 2102 and 2017<sup>5</sup>) are GHC 25.5 and 40.8 for rural and urban working women. The total loss of earnings, the product of the number of days and the average earnings by sex and area, is estimated to be GHC 1.237 billion (USD\$ 0.284 billion) or 0.6% of the current GDP of GHC 205.9 billion in 2017.

## 4.2 | Indirect losses: Sectoral and government revenue loss

As noted earlier, the cost of violence is not limited to the income loss to the individual women and their family. The interconnected nature of the economy implies that there is more to the cost incurred by the individual and the family. 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 loss due to reduced employment opportunities. Therefore, the total loss to the economy as a whole should include both the direct income loss to the household sector and the indirect income loss to the economy owing to the linkages in the economy. The indirect loss is called as the ‘multiplier loss’ in the literature (Raghavendra et al., 2017).

From our estimation, the direct income loss to women experiencing violence is GHC 1237 million or 0.60% of GDP in 2017. After accounting for the leakages through income taxes and household savings, which together

<sup>4</sup>The survey was completed in 2017.

<sup>5</sup>The accumulated inflation between the 2 years is 199.7%, with an average annual inflation rate of 14.9% during the period.

**TABLE 4** Macroeconomic loss due to VAW, Ghana

	Million GHC	% of GDP
Direct income loss	1236.8	0.60%
Indirect income loss	708.9	0.34%
Indirect/direct ratio	0.57	
Macroeconomic loss	1945.7	0.94%
Fiscal revenue loss <sup>a</sup>	157.8	0.49%

<sup>a</sup>Fiscal revenue loss as percentage of government revenue in 2017.

Source: Authors' calculations.

**TABLE 5** 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.

account for 16.5% and 31.1%, respectively,<sup>6</sup> the total household expenditure as per the 2015 Ghana SAM in rural and urban households is used in the estimation of the indirect loss. Through the multiplicative linkages between the net household consumption and the productive sectors, as well as among the productive sectors, the direct income loss in the household sector induces further economy-wide indirect loss of gross domestic production, which amounts to GHC 708.9 million, or 0.34% of GDP (Table 4). This is almost 57% of the direct income loss or 36.4% of the total macroeconomic loss to the economy. In other words, every 1 GHC loss of income to the household due to violence, an additional loss of 0.57 GHC is incurred by the rest of the economy. In total, taking both the direct and indirect losses, the macroeconomic loss due to VAW is estimated to be GHC 1945.7 million, or 0.94% of GDP in 2017. In effect, Ghana's national GDP in 2017 could have been 0.94% higher in the absence of VAW.

Furthermore, the direct and indirect losses due to violence also inflict loss to 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 government (see Table 5). In the case of Ghana, the loss of fiscal revenue due to VAW amounts to GHC 157 million or 0.49% of the total tax revenue of the government in 2017.

### 4.3 | Sectoral loss

The analysis of the sectoral distribution of the multiplier-induced indirect costs highlights the pathways of propagation of the impact of VAW on the overall economy. Table 5 reports the sectoral analysis and shows the impact on the sectors due to the VAW. 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, that is, available land and mineral deposits. Hence, it may be necessary to adjust down the potential

<sup>6</sup>The tax and savings rates have been specified in the 2015 Ghana SAM and are not our estimates.

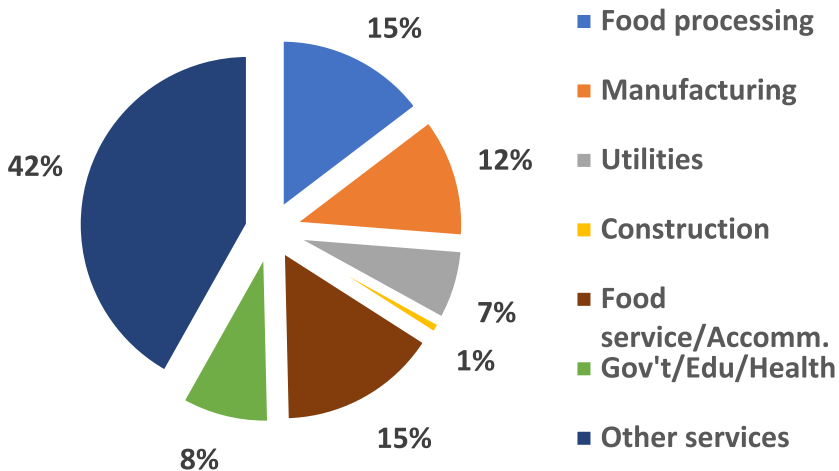
multiplier effects of these sectors. In this analysis, we set them to zero. With the absence of these sectors in the multiplier analysis, the results should be treated as providing a lower bound for the estimates of macroeconomic loss.

For the sectoral analysis, we aggregated the sectors according to the 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 other services. The aggregate sector 'other services' include wholesale and retail trade, transportation and storage, information and communication, finance and insurance, real estate activities and business services.

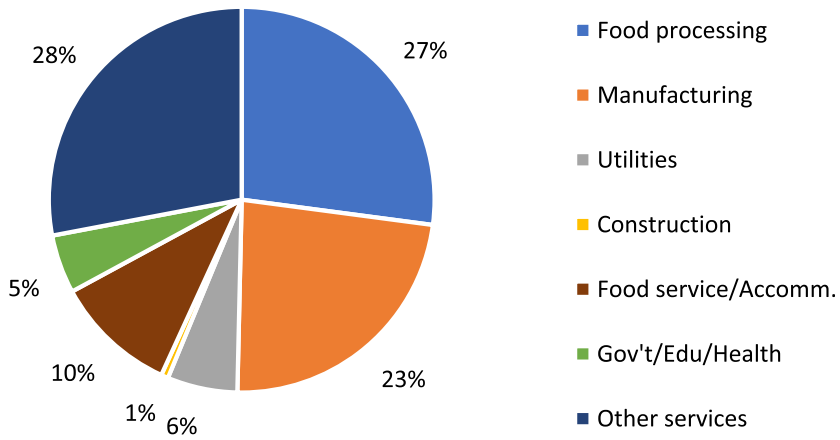
In terms of the sectors that exhibit major losses, the service sector, 'other services', is the highest with the loss of output amounting to GHC 296.7 million, which corresponds to about 42% of the total loss of GDP due to VAW. The food service and accommodation and food processing sectors also incur heavy losses amounting to GHC 110.4 million and GHC 103.9 million, respectively, followed by manufacturing and public administration, health and education sectors. In addition to the loss of output in the aggregate sectors, we also estimate the loss of income and loss of tax revenue, particularly arising from sales tax, and these figures are given in Table 5. While the income loss captures the direct effect of violence on women working in these sectors, the tax revenue loss represents the indirect effect of violence on the economy, and the sectoral shares are given in Figures 1 and 2.

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 impacts to the economy owing to the multiplicative linkages between the sectors. Figure 3 shows the details.

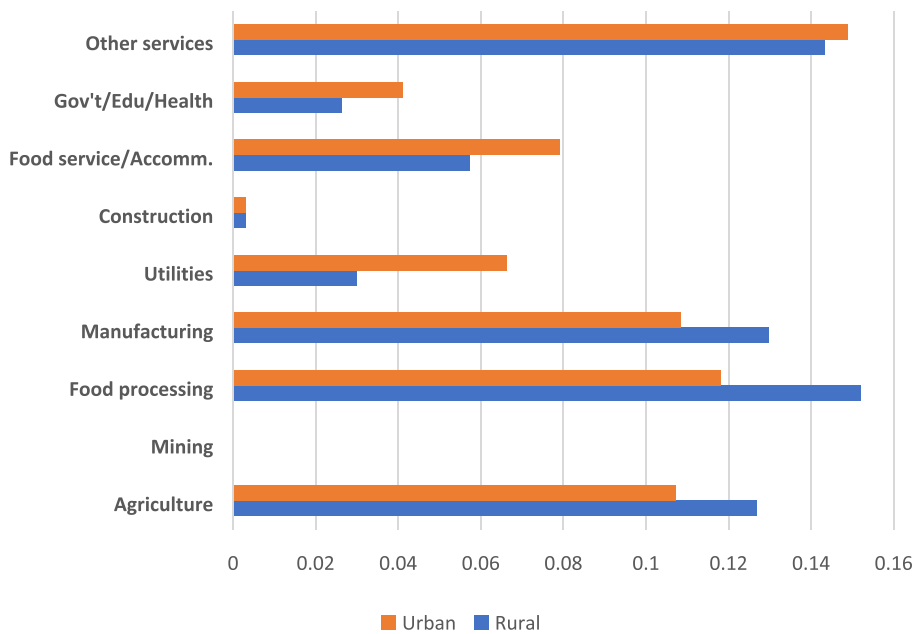
The consumption pattern reveals the dominance of the service sector, that is, other services, in both urban and rural areas. The other sectors that exhibit high consumption shares are food processing, manufacturing and food service and accommodation. The intuitive understanding of the sectoral loss becomes clear when the consumption shares are seen together with the output multipliers of the sectors, which is shown in Figure 4. For instance, 'other services', in the service sector, with the consumption share of about 15% and the multiplier value of about 1.38, leads the way in terms of being the largest contributor, other than construction, to the loss of output in the economy. On the other hand, although food service and accommodation sector has a lower consumption share, relative to 'other services', its strong multiplier value (1.35) makes it the second largest contributor to the loss of output in the economy.



**FIGURE 1** Sectoral output loss, Ghana (share as % of total). *Source:* Authors' calculations



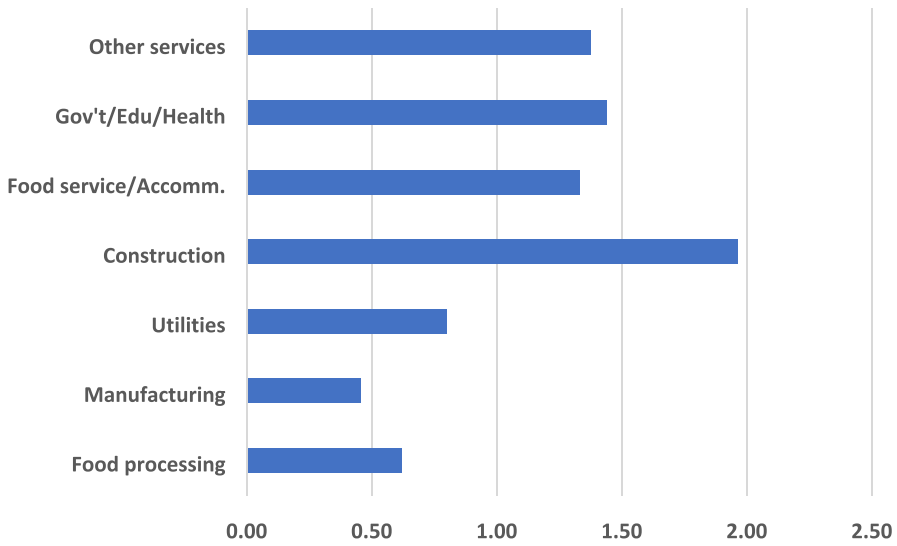
**FIGURE 2** Tax revenue loss, Ghana (share as percentage of total). *Source:* Authors' calculations



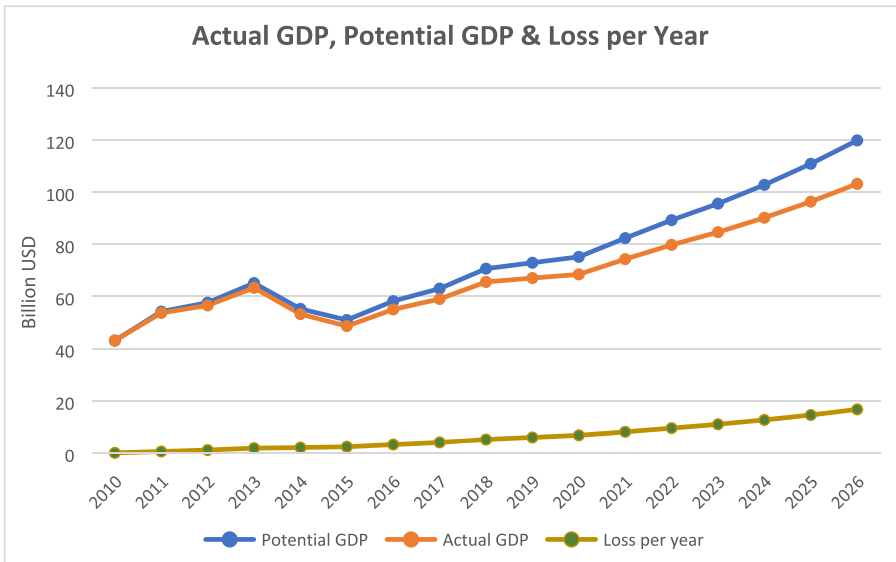
**FIGURE 3** Detailed distribution of household consumption in rural and urban areas, Ghana (ratio to total household expenditure). *Source:* Authors' calculations

#### 4.4 | Cost of inaction

The above analysis reveals that the macroeconomic loss due to VAW is 0.94% of GDP in 2017 in Ghana. We can interpret this number as the additional income that the economy could have earned in the absence of violence, or in other words, it provides the *potential income or GDP*. As discussed above, this estimate should be taken as the lower bound due to 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 government in terms of revenue loss due to VAW is



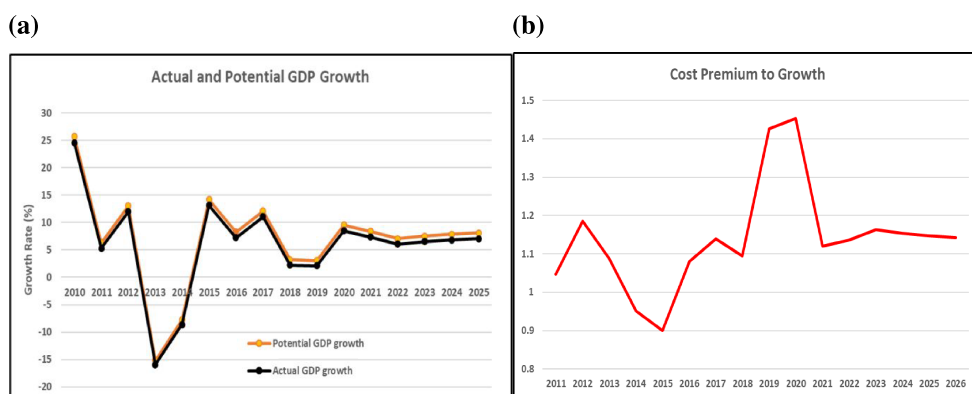
**FIGURE 4** Sectoral GDP multipliers. *Source:* Authors' calculations



**FIGURE 5** Actual and potential GDP and annual loss per year. *Source:* Authors' calculations

0.49% of the total government revenue in 2017, or in other words, the additional revenue that the government could have earned is 0.49% of the actual total revenue in the absence of violence.

From a policy perspective, the loss due to VAW, that is, 0.94% of GDP, is an additional cost that the economy suffers due to violence over and above the level of spending incurred for the existing level of service provisioning to mitigate and eliminate VAW. Since the spending for the existing service provisioning is already counted in the current GDP, the loss of 0.94% of GDP due to VAW is like a ‘leakage’ from the macroeconomic circular flow.



**FIGURE 6** (a) Actual and potential growth rates and (b) Cost premium to growth. Source: Authors' calculations

The size of the leakage is the difference between what the economy could have earned in the absence of violence, that is, the *potential* GDP and the *actual* GDP. While our estimates are derived at a point in time, primarily due to the lack of longitudinal data on VAW and also the availability of social accounting matrices, the full extent of the leakage, or the *cost of inaction*, can be seen from the cumulative costs to the economy over a period due to violence.

Assuming the prevalence rates of violence remain at the current rate and the corresponding loss due to VAW to be 0.94% of GDP, we estimated the cumulative cost to the Ghana's economy over a period of time using the actual and predicted GDP data for Ghana from 2010 to 2024 provided by the IMF's World Economic Outlook, as shown in Figure 5.<sup>7</sup> It shows the actual and the potential GDP of Ghana for the period, and the loss per year due to violence. As can be seen from Figure 5, even under the restrictive assumption of constant percentage loss due to violence, the difference between the potential GDP and the actual GDP widens due to the growth effect.<sup>8</sup> In other words, the constant percentage loss due to VAW gets compounded as it is impacted by the growth of the economy. This can be seen in Figure 5, where the loss per year to the Ghanaian economy grows to about 12.81 billion USD or about 14% of the projected GDP in 2024.<sup>9</sup>

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, that could have been achieved by an economy for it to grow at its potential and is calculated as<sup>10</sup>:

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

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

<sup>7</sup>Please see Table A1 and Appendix C, for the derived estimates of potential GDP and cumulative loss.

<sup>8</sup>See Appendix B for the derivation of potential GDP

<sup>9</sup>The loss per year provides a measure of loss on a yearly basis. Since the potential growth gets influenced by the actual growth of the economy, the loss per year incorporates the compounding effect (see Appendix B). One can also estimate how the loss due to VAW accumulates over a period of time. For instance, between 2010 and 2026, assuming the constant loss of 0.94% due to VAW, the cumulative loss (stock) is estimated to be about USD 1040 billion, which is about 9% of the cumulative GDP over the same 16-year period. See Table D1.

<sup>10</sup>See Appendix C for the derivation of the growth premium.

Using the actual and projected GDP growth rates between 2011 and 2026 for Ghana, published by the IMF's World Economic Outlook 2021, we estimated the growth premium for the Ghanaian economy, shown in Figure 6a,b. The actual and potential GDP growth rates are displayed in Figure 6a, and in Figure 6b, the factor values or the growth premium for the corresponding period are displayed. To interpret these values, let us consider a few cases in Figure 6b. In 2012, the actual growth rate of Ghana was reported to be 5.33%. The factor value for 2012 is 1.1857, which indicates that the Ghanaian economy should have achieved an additional 18% of the actual growth rate, that is, it should have grown at 6.321%, to have offset the loss of GDP due to violence.

On the other hand, in 2014 and 2015, Ghana registered negative growth rates of  $-15.97$  and  $-8.60$ , respectively. The growth premium factors of 0.95 and 0.90 for 2014 and 2015, respectively, indicate that in the absence of the loss due to violence, the Ghanaian economy would have registered a lesser negative growth of  $-15.17$  and  $-7.75$  for these years. In other words, the growth premium values of less than one in those years when the Ghanaian economy slowed down indicate that the downturn in the economy could have been less severe and would have shrunk to a lesser extent than what it experienced in the absence of violence. Therefore, even with the assumption of a constant loss of GDP,<sup>11</sup> the growth premium imposed by violence varies relative to the actual rate of growth—the lower the growth, the higher the premium and vice versa.

## 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 to businesses, economy and society are not well explored. Even while the issue of VAW is now explicitly incorporated into the global development policy agenda via the UN 2030 Sustainable Development Goals Agenda, translating this commitment to concrete policy action on VAW, particularly in a context where economic reasoning weighs more than all other considerations in policy making, remains a challenge. In this article, we develop a comprehensive analytical framework to estimate and articulate the ramifications of VAW on the wider macroeconomy.

One of the main contributions of the article is to provide a framework to view the issue of VAW in the context of macroeconomic circular flow and integrate it in the conventional multiplier analysis. To that extent, our analysis contributes to the existing methods in the costing literature and enables us to translate the microlevel income loss due to VAW to the total macroeconomic loss to the economy. Our analysis reveals that the overall macroeconomic loss due to VAW to be 0.94% of the 2017 GDP in Ghana. The loss to the economy can also be seen as the potential income that could have been gained in the absence of violence. Since the loss due to VAW goes unnoticed and is encapsulated in the actual GDP of the economy, this loss is a permanent invisible 'leakage' from the macroeconomic circular flow. Moreover, given that the loss due to VAW is estimated at the existing level of provision for protection, prosecution and prevention services, the cost of no further action, that is, the *cost of inaction*, has implications for economic growth.

We quantify the implications of the cost of inaction to growth in terms of the premium the economy pays due to violence. The growth premium analysis quantifies the implications of the cost of inaction 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. In the case of Ghana, the growth premium that VAW imposes is about 45% of the actual growth rate of Ghanaian economy in 2020, where the Ghanaian economy should have grown at 3.07%, as opposed to the actual growth of 2.11, to offset the loss due to VAW and reach its potential rate of growth.<sup>12</sup> Thus, our analysis

<sup>11</sup>Note that we are only considering the effect of a constant loss due to violence on output growth. The issue of whether violence against women has long term growth effects or not remains an open question.

<sup>12</sup>The predicted GDP data published by the IMF World Economic Outlook is pre-Covid outbreak, or at the very least, it captures the impact partially especially for the year 2020.

shows that the loss due to VAW is not just a once-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 or shrinking. This is particularly stark when the economy is shrinking, or in recession, as the growth premium highlights the hidden cost of violence to growth by showing how much the actual growth is worse off *vis-à-vis* its potential.

The economic loss due to violence would be even higher if we could have included a wide range of impacts such as 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 the intergenerational impact of VAW and study its implications for permanent growth effects via the 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 article, we provide one way to study the impact of VAW within the structures of the formal economic analysis. The analytical framework developed here enables us to highlight how VAW, which is often dismissed as a 'private matter', inflicts a permanent, and yet invisible, drain on the economy, and if continued to be ignored, it has far reaching implications for economic growth and development in the long run.

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## DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available at <https://doi.org/10.7910/DVN/RU1X7W> (Duvvury et al., 2019).

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## APPENDIX A: SCHEMATIC GHANA SAM

The schematic Ghana SAM displays a symmetric table of flow of funds stemming from transactions among various sectors and institutional accounts of Ghana in year 2015 (see Table A1 below).

The schematic Ghana SAM displays a symmetric table of flow of funds stemming from transactions among various sectors and institutional accounts of Ghana in year 2015. The matrix is complication of the country's national accounts, including institutional income and expenditure and input–output accounts, and various household-level survey data. The multiplier analysis in this article exploits endogenous circular linkages of the accounts in the SAM. 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 of interdependent households and firms. The positive multiplying effects then raise income and production of the economy. It enables researchers to analyse macroeconomic impacts on production, employment and income growth and distribution via direct and indirect channels (Pyatt & 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  $i$ ,  $\sum_i x_i$ . 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.

## APPENDIX B: POTENTIAL GDP

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

$$PGDP_0 = AGDP_0. \quad (B1)$$

For the next period, the potential GDP is calculated as

$$PGDP_1 = PGDP_0(1+g) * (1+l) = AGDP_0 * (1+g) * (1+l), \quad (B2)$$

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

Iterating forward to the next period,

$$PGDP_2 = PGDP_1(1+g) * (1+l) = AGDP_0 * (1+g)^2 * (1+l)^2, \quad (B3)$$

and to the  $k$ th period yields

$$PGDP_k = AGDP_0 * (1+g)^k * (1+l)^k. \quad (B4)$$

In (1), if  $l = 0$ , that is, when there is no loss due to VAW, then the potential GDP is equal to the actual GDP. For instance, the potential GDP at the  $k$ th period is

$$PGDP_k = AGDP_k = AGDP_0 * (1+g)^k. \quad (B5)$$

The loss per year then is simply the difference between the potential and the actual GDP. For instance, the loss of GDP in the  $k$ th period is given by

$$PGDP_k - AGDP_k = AGDP_0 * (1+g)^k * [(1+l)^k - 1] \quad (B6)$$

The potential output at any given year is the potential GDP in the previous times the growth rate of GDP plus the additional amount of income that could have been earned in the absence of violence. The loss per year (Equation B6) is simply the difference between the potential output and the actual output for any given year. Note that since the potential GDP at any period (Equation B4) is influenced by the actual growth of the economy, the loss per year incorporate the growth effect and in that sense the loss per year (Equation B6) provides a measure of cumulative loss due to VAW. From B4 and B6, it can be seen that even a 1% loss due to violence at a point in time can lead to a larger cumulative loss due to the accumulated growth effect.

## APPENDIX C: 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

$$\frac{AGDP_k - AGDP_{k-1}}{AGDP_{k-1}} = g. \quad (C7)$$

The potential GDP for 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

$$\frac{PGDP_k - PGDP_{k-1}}{PGDP_{k-1}} = g(1+l) + l. \quad (C8)$$

The growth premium, that is, 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

$$\text{Growth premium} = \frac{PGDP_k - PGDP_{k-1} / PGDP_{k-1}}{AGDP_k - AGDP_{k-1} / AGDP_{k-1}} = 1 + \frac{l(1+g)}{g}. \quad (C9)$$

## APPENDIX D: ESTIMATION OF POTENTIAL GDP, LOSS PER YEAR AND GROWTH PREMIUM

TABLE D1 Potential GDP, loss per year and growth premium estimation: Ghana (unit: billion USD)

Year	Ghana actual and predicted GDP (billion USD)	Per cent loss of GDP due to VAW	Actual GDP growth	Potential GDP	Potential GDP growth	Loss per year	Cumulative loss	Growth premium
2010	43.04	0.94		43.04		0	0	
2011	53.65	0.94	24.63	54.15	25.80	0.50	0.50	1.05
2012	56.51	0.94	5.33	57.57	6.32	1.07	1.57	1.19
2013	63.28	0.94	11.99	65.08	13.04	1.80	3.37	1.09
2014	53.17	0.94	-15.97	55.20	-15.18	2.03	5.40	0.95
2015	48.60	0.94	-8.61	50.92	-7.75	2.33	7.73	0.90
2016	54.99	0.94	13.16	58.16	14.22	3.18	10.90	1.08
2017	58.98	0.94	7.25	62.97	8.26	3.99	14.89	1.14
2018	65.52	0.94	11.09	70.61	12.13	5.09	19.99	1.09
2019	67.00	0.94	2.26	72.88	3.22	5.89	25.87	1.43
2020	68.42	0.94	2.12	75.13	3.08	6.71	32.58	1.45
2021	74.26	0.94	8.54	82.31	9.56	8.05	40.63	1.12
2022	79.74	0.94	7.38	89.21	8.38	9.47	50.11	1.14
2023	84.59	0.94	6.09	95.53	7.09	10.94	61.05	1.16
2024	90.13	0.94	6.54	102.74	7.54	12.61	73.66	1.15
2025	96.30	0.94	6.85	110.81	7.85	14.51	88.17	1.15
2026	103.13	0.94	7.09	119.78	8.09	16.65	104.82	1.14

Source: Authors' own calculation using the actual and forecast GDP data for Ghana from the IMF World Economic Outlook, March 2019.