

The Macroeconomic Loss Due to Violence Against Women: The Case of Pakistan



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LIST OF ABBREVIATIONS

CAD	-	Canadian dollar
CHF	-	Swiss franc
DALY	-	Disability adjusted life years
DFID	-	Department for International Development
EUR	-	Euro currency
GDP	-	Gross domestic product
ILO	-	International Labour Organization
IMF	-	International Monetary Fund
IPV	-	Intimate partner violence
LFS	-	Labour Force Survey
PBS	-	Pakistan Bureau of Statistics
PDHS	-	Pakistan Demographic and Health Survey
PKR	-	Pakistan rupee
SAM	-	Social accounting matrix
SDG	-	Sustainable Development Goal
SPDC	-	Social Policy and Development Centre
USD	-	United States dollar
VAW	-	Violence against women
VAWG	-	Violence against women and girls
YLL	-	Years life lost

ABSTRACT

Violence against women and girls (VAWG) is a widely recognised human rights violation with serious consequences for the health and well-being of women and their families. However, the wider ramifications of violence against women for businesses, communities, economies and societies are only recently being recognised. Despite this recognition, there are few studies exploring how 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 0.085% of the Pakistani GDP in 2017, which 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 once-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 Codes: E16, E19, E71, J16, B54, O53

1. INTRODUCTION

Violence against women and girls (VAWG)¹ is a widely recognised human rights violation with serious consequences for the health and well-being of women and their families. There is however limited recognition of the wider ramifications of violence against women for businesses, communities, economies and societies. Some studies estimate that VAWG costs the global economy about USD\$4 trillion (for example, Fearon and Hoeffler, 2015) or regional economies, such as the European Union, about USD\$307 billion (Walby and Olive, 2014). Few studies, however, outline national costs for low and middle-income countries.² There are even fewer studies exploring how both the economic and social impacts of violence affect economic growth, development and social stability. In a context of renewed commitment to achieve gender equality and eliminate VAWG, as part of the internationally agreed Sustainable Development Goals (SDGs), it is essential to demonstrate and highlight the wider economic consequences of VAWG for realising the SDG 5 by 2030.

In order to fill this gap and to provide robust evidence on the economic impact of violence against women on broader national economies, the UK Department of International Development funded and supported in-depth studies on the economic and social costs of violence against women in Ghana, Pakistan and South Sudan as part of its global What Works to Prevent Violence programme. The study was led by the National University of Ireland, Galway, in partnership with premier research institutions in each of these countries. In the case of Pakistan, the research was conducted in partnership with the Social Policy and Development Centre (SPDC) in Karachi.³ The research is based on a representative survey of 2998 women across the five main regions of Pakistan exploring both the violence experienced by women as well as the specific economic and social impacts they suffered as a result. In this report we develop a comprehensive analytical framework and provide a rigorous analysis of the impact of violence against women and girls on Pakistan's economy as a whole using the data from the field survey, which was collected for the first time in Pakistan.

1. We wish to clarify that violence against women and girls (VAWG) and violence against women (VAW) are used interchangeably in this paper. The underlying survey for this report had married and unmarried women 18–60. According to UNICEF those aged up to 25 are considered youth. To reflect that we had young women in the survey, the terms are used interchangeably.

2. Examples include: Duvvury et al. (2013), Raghavendra et al. (2017, Vietnam); Siddique (2011, Bangladesh); Vyas and Watts (2013, Tanzania).

3. The survey was undertaken by Ipsos MORI's country office in Pakistan in collaboration with NUI Galway and SPDC.

The report is structured as follows: in the rest of section 1, we introduce the country characteristics (1.1) and further details of the field survey and findings on the prevalence of VAWG in Pakistan (1.2). In section 2, we turn to briefly review the methodologies commonly used in costing studies to date. While the current studies provide economic costs of violence against women, a key gap is the lack of knowledge about its impact to 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 loss to the economy. First, 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 (SAM) used to estimate indirect loss of violence via the sectoral linkage of the economy is explained in 3.2. The key results and findings are discussed in section 4. A key finding is that the direct loss across the three dimensions of impact of VAWG considered in the study stands at PKR43 billion (USD\$358 million at 2017 exchange rate) or about 0.135 % of 2017 GDP. We present detailed analysis of direct and indirect loss 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

In 2017, Pakistan stood at 143 out of 144 countries in terms of the Global Gender Gap Index compiled by the World Economic Forum. The low standing of Pakistan was due to the significant gender gap in economic opportunities. Pakistan in fact has a low female labour force participation rate (approximately 24.2% in 2015).⁴ However, it

4. Pakistan Bureau of Statistics, Labour Force Survey 2014–2015

should be noted that educational levels are rising, especially among urban women; by 2015 76% of the female labour force had basic education.⁵

While some prevalence studies have been carried out, there is no single comprehensive source of prevalence data for VAWG in Pakistan, though the Pakistan Demographic Health Survey (PDHS) does provide national estimates for intimate partner violence (IPV). Indeed, in its 2013 review of Pakistan's obligations, the Committee on the Elimination of Discrimination Against Women expressed concern at the inconsistencies in the collection of data on violence against women. All existing studies have limitations, whether of sample size or methodology. Furthermore, certain forms of violence are more easily quantified than others: thus, a certain amount of data exists for prevalence of IPV; but much less for early and forced marriage, or for non-partner sexual violence. Thus, it is difficult to draw comprehensive conclusions, although it is clearly the case that violence against women and girls, in its many forms, is endemic.⁶

1.2 Survey of women and girls in 2016

For this particular study, a survey of 2998 women aged 18–60 was implemented in the five main regions of Pakistan to explore in depth the prevalence of different forms of violence experienced by women and establish the economic consequences of this violence. The survey was broadly representative of national demographic data collected through the Labour Force Survey (2015) and the Pakistan Demographic and Health Survey (2017–18). In terms of education, the distribution by educational level between our survey and the PDHS are almost identical – proportions in both surveys of those with no education being 48% versus 49%, slightly lower among those with primary and up to eighth class (22% versus 26%), slightly higher among those with secondary education (15% versus 12%) and slightly higher among those with higher than secondary education (14.5% versus 13%). The slight variations are partly attributable to the higher age range in our survey. In terms of wealth quintiles, the distribution as per the PDHS and our survey were also identical with rural households being concentrated in the first three quintiles, whereas urban household

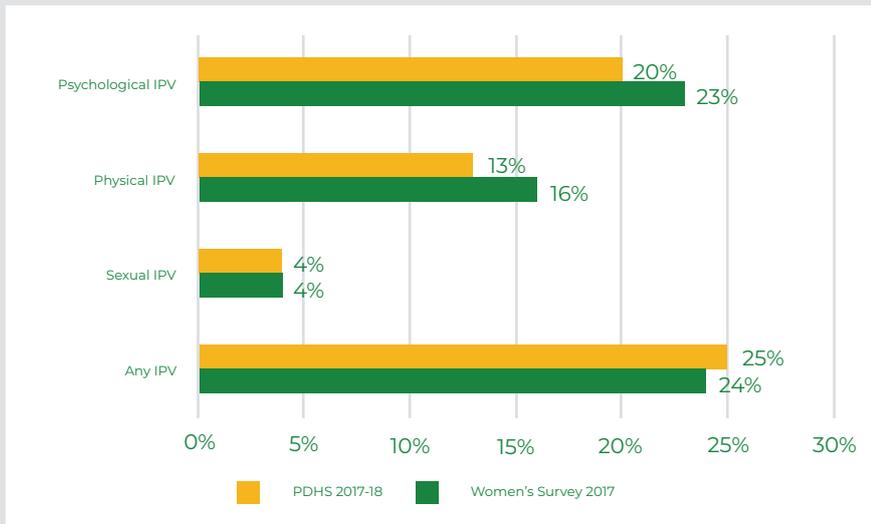
5. World Bank (2018) Micro Data Bank available at <https://data.worldbank.org>

6. Working Paper No.5 Pakistan: The Economic and Social Impact of Violence Against Women and Girls (VAWG) (March 2017) available at <http://whatworks.co.za>

were concentrated in the highest quintile (42% and 45% respectively). In terms of employed women in the survey, respondents were less likely to report to being in employment than in the LFS 2017–18 survey (9% compared to 22% for the same age group in the LFS). However, the dissimilarity was largely attributable to the fact that our survey did not capture women who are self-employed or working as unpaid family workers. The proportion of those working in paid employment was almost identical between our survey and the LFS (7.1% versus 6.7% respectively). Given the closeness of these figures we have used the LFS employed-to-population ratio to estimate the impact of violence on productivity loss.

In 2019 the Pakistan Bureau of Statistics (PBS) released the microdata of the new prevalence study on IPV conducted in 2017–2018 among women aged 15–49. The survey of 13,118 women indicates that 34.2% of ever-married women aged 15–49 had ever experienced emotional, physical, or sexual violence committed by any husband, with 24.8% having experienced such violence in the past 12 months. In the current study of 2998 women aged 18–60 in four provinces of Pakistan, 24% of married women reported experiencing economic, psychological, physical and/or sexual violence in the last 12 months. Given the difference in the age group and that the PBS survey also included the FATA region, we compared both data sets to the age group 18–49, limited the regions to the four main provinces and considered only the common set of types of IPV, i.e. psychological, physical and sexual. The rates within this comparable group are almost identical between the two surveys.

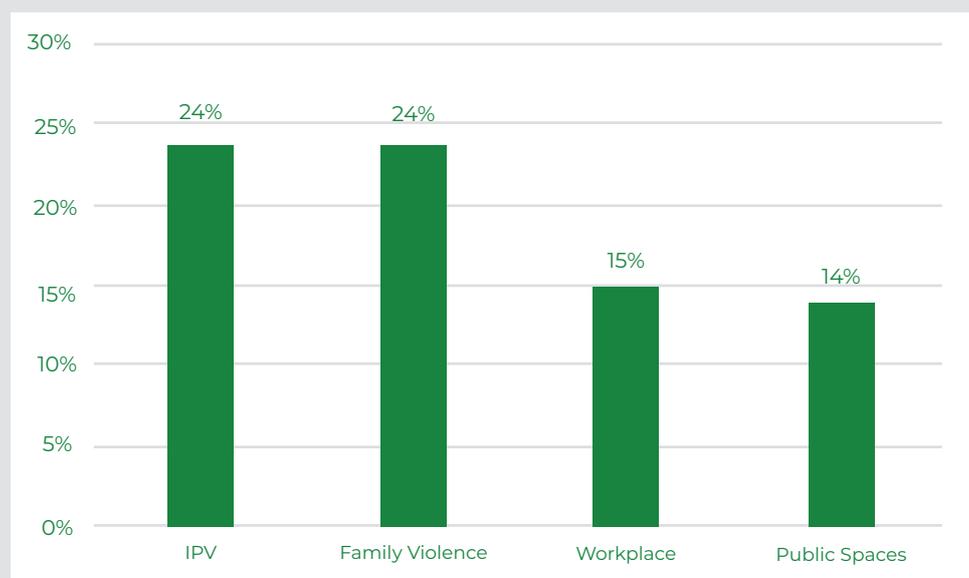
Figure 1: Comparative prevalence rate of types of IPV (18–49 years) during 12 months



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

In our study, in addition to IPV, we explored the violence women experienced from family members, work colleagues, and strangers in public spaces. Overall one in three experienced some form of violence inside and/or outside the home. Violence by the husband/partner, or what is referred to as intimate partner violence globally, was the most common experience reported by women in Pakistan. Among women living in extended families almost one in four experienced family violence (24%). Among women working, roughly one in six women experienced violence in the workplace (15%) and less than one in seven of all surveyed women experienced violence in public spaces (14%). Overall, 23% of surveyed women experienced violence by non-partners in the past 12 months. Of particular importance in terms of the economic impacts is to note that 25% of working women in Pakistan experienced IPV and 30% experienced non-partner violence in the past 12 months.

Figure 2: Prevalence of violence against women and girls in Pakistan, 2017



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

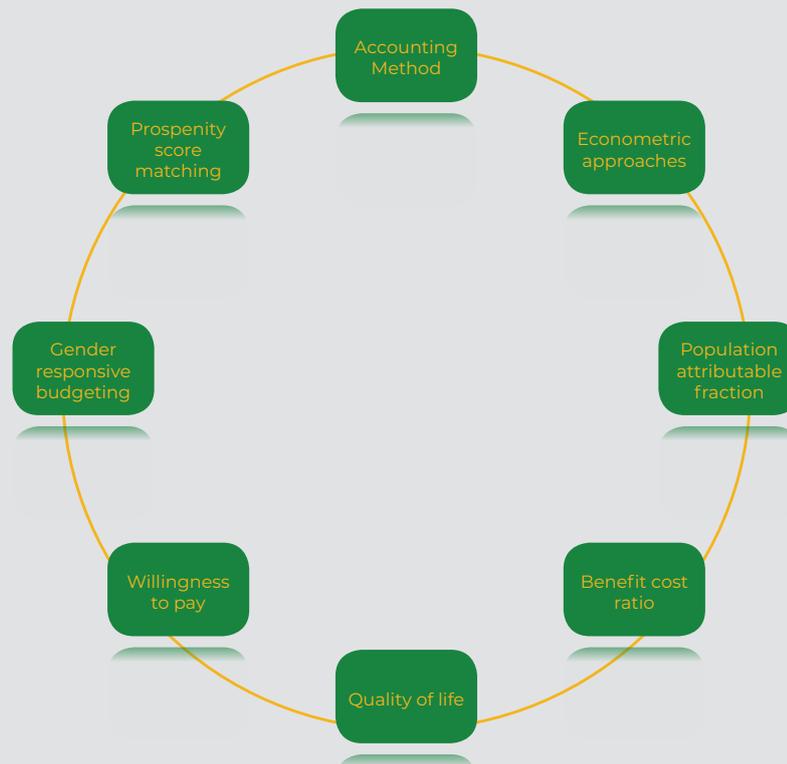
2. REVIEW OF LITERATURE

It is well established in the literature on VAW that the social and economic costs of VAW manifest as multiple impacts at individual, household, business, government and wider community levels (Duvvury, et al., 2013; Day, et al., 2005; Walby, 2004). The impact of VAW 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, out-of-pocket expenditures for accessing services, and replacement costs for lost property (Bacchus, et al., 2018; WHO, 2013; Duvvury, Minh and Carney, 2012). 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 et al., 2013; Crown et al., 2011; Reeves and O'Leary-Kelly, 2007).

Meta reviews of costing studies (Duvvury et al., 2004; Morrison and Orlando, 2004; Day et al., 2005; Willman, 2009; Duvvury et al., 2013) have identified several

distinct methodologies to cost VAWG including direct accounting methodology, human capital approaches including propensity score matching, willingness to pay/contingent valuation, disability adjusted life years and gender responsive budgeting.⁷ Over 55 studies have used one or more methodologies to establish direct and intangible costs and also direct intangible costs of pain, suffering and/or loss of quality of life in high, middle and low income countries (Duvvury et al., 2013).

Figure 3: Methodologies to quantify the impacts of VAWG



Source: Authors' own based on review of literature.

Depending on the methodology used or the mix of methodologies employed, studies have identified costs ranging from financial costs for individual survivors in terms of expenditures for services to treat or mitigate the health and psychosocial impacts of violence, to opportunity costs in terms of the impacts on human capital, work and productivity, and to welfare costs/losses in terms of intangible impacts on pain, suffering and quality of life. In addition, studies have estimated the costs borne

7. See Appendix 1 for sample studies applying some of the approaches.

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 at CAD\$7.4 billion (or CAD\$220 per person). In US dollars this comes to USD\$6.8 billion (or USD\$204 per person). Three categories of cost are included: the impact borne by the justice system, by primary victims, and by third-parties and others. 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 health care, mental health care, productivity loss, personal costs and intangible victim costs (i.e. pain and suffering and loss of life). Finally, third party and other 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 waged work and non-agricultural self-employment using data from the 2008–09 Tanzania National Panel Survey. The results show that abused women earn less than non-abused women, with the greatest loss experienced by women in formal waged work and by women in urban areas. This equates to an estimated productivity loss of 1.2% of Tanzania's GDP. In Colombia, Sanchez et al. (2004) found that women who experienced moderate violence would have earned approximately USD\$60 more per month if they had not been abused. Women who experienced sexual violence would have earned USD\$100 more per month. This compared to a mean monthly earning for the entire sample of USD\$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 outcomes, lower productivity via tardiness and work distraction, and greater likelihood of employment instability among survivors of violence.

Other studies have used 'quality of life' losses (either measured as 'disability adjusted life years', i.e. DALYs, or 'year life lost', i.e. 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

lost due to violence. The report estimates that 48.4 million DALYs were lost as a result of 1.6 million deaths due to violence in 2002, for a total estimated economic value of USD\$151 billion (in constant USD for the year 2000). The DALYs lost to 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 in their sample, 20,000 years of life are lost in Switzerland due to lifelong 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 says 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 UK using the Home Office methodology. This approach is based on the 'burden of disease' methodology which estimates the cost of gender-based violence⁸ 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, the cost of the physical and emotional impact of gender-based violence is estimated to be EUR€19 billion, of which 89% was due to gender-based violence experienced by women in the last 12 months. The cost of physical and emotional impact of IPV was estimated at EUR€7 billion, of which 91% was due to IPV against women.

Finally, the broadest estimates of 'costs of violence' are either simple extrapolations of employing scaled unit costs across contexts or thought experiments. Hoeffler and Fearon (2014) cited at the beginning of this paper provide an estimate of the costs of IPV as more than USD\$4 trillion. The estimation is based on estimating the number of women worldwide experiencing physical and/or sexual violence assaults and applying the same 'unit cost per assault' – or \$199,642 for rape and sexual assault and \$95,023 for aggravated assault (Fearon and Hoeffler, 2014, 23).⁹ To estimate the costs of IPV, the lower rate of aggravated assault was used though IPV includes

8. This study had a broader focus on gender-based violence experienced by women and men. Gender based violence was defined as violence on the basis of a person's gender reflecting gender norms, stereotypes and unequal power relations with societies. Given the majority of those who experience GBV are women, GBV is often used interchangeable with VAW in violence literature.

9. The cost/per assault figures were estimated by McAllister et al. (2010) in the US.

both physical and sexual assaults to derive a conservative estimate. McKinsey Global Institute in 2016 employ a similar approach to estimate costs of pain, suffering and stunted quality of life due to violence against women in the US drawing on an earlier estimate by Centre for Disease Control in 2003 of 'present value of life earnings' from IPV-related death.¹⁰ The methods employed in these two studies provide a rough back-of-the-envelope estimate of the magnitude of costs. However, neither of these estimates considers a more detailed analysis of the multiplier effect across various sectors of the economy.

To summarise, the existing approaches for estimating the economic cost of VAW is one of aggregating the specific monetary costs arising at an individual level. However to advocate with governments to invest in the service provision for women affected by violence, and in prevention of VAW, it is important to highlight potential gains to the overall economy, as macroeconomic constraints often dictate budget allocations in individual departments. We believe that one of the main reasons why the issue of VAW has not entered the macro policy discourse is the lack of quantitative translation of the individual specific micro-level costs that lead to costs for the overall economy. The aim of our research is to fill this gap in the literature and provide quantitative estimates of macroeconomic loss due to VAW.

3. METHODOLOGY

VAWG is mostly recognised as the 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 partner and non-partners. It impacts women, at least, on three dimensions.¹¹ VAW reduces their productivity at work (via presenteeism or being less productive while at work due to distraction, less focus, working slowly, having accidents, etc.), it impacts on their ability to perform household production, including care work, and it inflicts loss of income due to absenteeism. Using the surveys, we estimate the direct loss due to violence in these three dimensions.

10. The Centre for Disease Control 2003 report is available here: www.cdc.gov/violenceprevention/pdf/IPVBook-a.pdf.

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

- (i) Absenteeism
- (ii) Presenteeism
- (iii) Household production and unpaid care work

3.1. Loss due to absenteeism

The macroeconomic costs of violence against women 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. Violence inflicts physical and psychological harms on women that can prevent women from engaging in paid work. Using the field survey conducted in Pakistan, we estimate the number of missing paid work days of women in rural and urban areas due to VAW.

The women's survey in Pakistan 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 they missed in the last 12 months because of experiencing violence. However, few women reported missed days of work, possibly unwilling to report direct impacts of violence and potentially undermining their status as 'good women'.¹² Thus an indirect method to estimate days lost was used. The indirect method uses an algorithm developed by Aristides Vara Horna based on review of management literature and used in his study on costs of intimate partner violence (IPV) to businesses in Peru and Bolivia.¹³ In this method, women who reported engaging in economic activity were asked the number of days they missed work (absenteeism) or had lower productivity (presenteeism) due to a range of reasons in the past four weeks. A comparison of difference in mean days missing between two groups – those who reported to have experienced the violence and those who have not—was undertaken to establish the annual days lost due to absenteeism and presenteeism due to violence. The mean difference was tested to be statistically significant using the Mann-Whitney test.

12. In the qualitative research, women did report missed work consequences as a general impact of violence but were reluctant to identify it as an individual impact for themselves.

13. The algorithm developed by Vara Horna (2014 and 2015) was slightly modified to address issues of overestimation. See Economic and Social Costs of Violence Against Women and Girls in Pakistan: Country Technical Report, available at www.whatworks.co.za

Table 1 shows the incidence rates violence against women in Pakistan in rural and urban areas. In rural and urban areas, respectively, 56.8% and 30.7% of employed women reported having experienced violence in the last 12 months. Note that 85% of employed women, reside in rural area. As a result, over 91% of victims in our study are in rural area.

Table 1 Incidence of violence among employed women, Pakistan (% of employed women, number of persons)

	Rural	Urban
Incidence of violence	56.8%	30.7%
Number of employed women, 18–60 years old (000s)	10,519	1,845
Number of victims (000s)	5,978	566

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

Source: Authors' estimations from the field survey for incidence rates; ILOSTAT for employed women.

Table 2 displays the average number of missing paid work days among the victim of violence and others, and the difference in the mean values. Women in rural areas who experienced the violence by intimate partners, family members, colleagues, peers or strangers missed 25.38 days of paid work on average during the last 12 months, and women who did not experience the violence missed 21.32 days on average. The difference in the number of missing days of paid work between the two groups is 4.06 days. Similarly, among women in urban area, the difference is 9.73 days. Note that the difference of the missing paid work days is much larger in urban areas. This may be indicative of higher severity of the violence in urban areas, despite the lower incidence rate. Or it may also be indicative of types of women's work or social norms in rural area that strongly discourages women from taking time off from their employment.

Table 2 The number of missing paid work days due to violence: absenteeism

Sector	Experienced any violence	Did not experience	Difference	Test value (Z)*	Significance
Rural	25.38	21.32	4.06	-2.809	0.005
Urban	29.34	19.62	9.72	-1.907	0.057

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

Source: Authors' estimation from the field survey.

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 average monthly earnings in 2016 from the ILOSTAT and adjusting for inflation to 2017 level, we estimate the average daily earnings for the women in Pakistan to be PKR597.7, assuming 26 working days per month.¹⁴ Then, the direct income loss due to absenteeism is simply a product of the estimated daily earnings and number of missed paid work days. Due to lack of separate data for rural and urban areas, the single value is applied for women's earnings in both areas.

A legal minimum wage may be another benchmark price for the valuation of absenteeism. However, we believe that incidence and severity of violence against women 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 most other women. Nonetheless, the average female earning happens to be very close to the minimum wage (PKR10,000–15,000 per month or PKR577 a day) for unskilled workers in 2017.

14. This study is representative of women and girls (18–60) and not of working women and girls (18–60). This could be problematic as the female employment-to-population ratio is particularly low at 22.4% in 2017, according to ILOSTAT. However, to account for this shortcoming in the data, proportions from the sample of working women are used to extrapolate at the national level. This corrects for the shortcoming because though the proportion of working women in the country is not reflective of the national figure; however, proportion of those missing work within those who are working can be safely assumed to be representative of the national figure.

3.2. Loss due to presenteeism

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

Table 3 shows the number of imputed average number of days missing 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 missing. The implicit loss for the victims of IPV is estimated to be 20.34 days of paid work during the reference time period and for women who did not experience violence it is 15.2 days on average. The difference between the two groups is 5.14 days. Similarly, the difference among urban women is 5.03 days per year.

Table 3 The implicit number of missing paid work days due to violence: presenteeism

Location	Experienced any violence	Did not experience	Difference	Test value (Z)*	Significance
Rural	20.34	15.2	5.14	-2.028	0.043
Urban	21.67	16.64	5.03	-2.058	0.040

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

Source: Authors' estimation from the field survey.

3.3. Loss due to missed household production and unpaid care work

To estimate the impact of violence on the lost productivity on unpaid care work at home (i.e. household production, days lost), we use the information in the survey about the number of unpaid care work days missed by them 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 following days missed in the following fourteen activities: fetching water, fetching wood, caring for children, ironing, washing clothes, sweeping, washing dishes, washing vehicles, disposing garbage, cooking, shopping for household needs, running errands, taking care of livestock or poultry, making clothes for family.

Table 4 shows the impact of violence in terms of number of days missing for life-sustaining activities for families. The losses in rural and urban area due to intimate partner violence amount to over 9.8 million days among rural women and 693,822 days among urban women in terms of the crucial household production and care activities.

Table 4 The implicit number of missing 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	Test value Total days missed
Rural	5%	6000062	16.43	9858840
Urban	2.47%	121888	5.69	693822

*Number of women missing work are rounded for display but not for estimation.

Source: Authors' estimation from the field survey.

The value of the missed household production days is a product of the number of days lost and a 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 adapt a simplified method of using a rounded minimum daily earning of PKR500.

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 approximate for the actual wages earned by these workers. Second, average hours spent on these activities by women is over five hours a day, according to the Pakistan Time Use Survey in 2007. In comparison, average hours spent on gainful activities (i.e. employment) is slightly lower than five hours a day among employed women. Hence the daily wage can be applicable in our simple exercise. As a result, the loss of household production due to violence amounts to PKR5.3 billion, or 0.017% of GDP.

Because of the implicit nature of the presenteeism and lost household production, we limit our analysis to determine the indirect loss to the cost of absenteeism due to violence in this report.

3.4 Estimation of indirect loss

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

- (1) Production activities (productive sectors of the economy) and commodities used (intermediate goods used in production);
- (2) Factors of production (capital and labour);
- (3) Agents (households, firms and government);
- (4) Capital accounts (the financial side of the macroeconomy); and
- (5) 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. Columns and rows of the table represent production, income and consumption flows in a balanced manner that total outlays from an agent (column sum) must equal total receipts to the agent (row sum). For instance, the total value of output in vehicle manufacturing must be equal to the total payment for inputs used in the production to other agents entitled to the payment, as seen in the Table 1.

A SAM provides a framework for linking macroeconomy with microeconomic activities, in particular of households. National accounts of an economy disaggregate into microeconomic accounts, based on household surveys. The disaggregation augments the distributional and social dimensions to the matrix, and thus allows one to see how total income is distributed across factors and households. For example, labour, 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 labour employed. A SAM also allows for information on several household types to be constructed depending on specific socioeconomic characteristics, i.e. rural versus urban location.

Table 5 Simplified schematic social accounting matrix

		ENDOGENOUS			EXOGENOUS			Total	
		Production accounts			Institutional accounts				
		Activities (1)	Commodities (2)	Factors (3)	Households (4)	Government	Saving and Investment	Rest of world	
E N D O G E N O U S	Activities (1)		Domestic supply (T12)						Gross Income
	Commodities (2)	Intermediate demand (T21)			Household final consumption (T24)	Government final consumption	Gross capital formation	Exports	Total demand
	Factors (3)	Value added (T31)							Total factor income
	Households (4)			Factor payments to household (T43)		Transfers to households		Remittances	Total household income
E X O G E N O U S	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 SAM.

Multiplier analysis based on a SAM exploits endogenous circular linkages of the accounts in the SAM. Demand and supply linkages (T_{21} , T_{31} , 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 and Round 1979).

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 is Y_j 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 cost accounts for the loss of income from absenteeism due to violence. The indirect cost accounts for the additional loss of output from the multiplier effect of the initial income loss. The estimation of the macroeconomic cost, 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 labour 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 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 output of these sectors respond to the exogenous changes of household demands 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 Pakistan.

Costs and availability of necessary data to build a SAM are the main issue in a developing country case. An elaborate macro SAM requires national economic accounts, international economic accounts, industry input-output accounts, labour force survey, and income and expenditure survey. National accounts – including gross domestic product, 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-bookkeeping principle. To the extent of micro data availability, one can disaggregate the accounts, especially of households. Data requirements can be challenging in many developing countries. Conducting nationwide surveys with adequate frequencies can be too costly to commit to; prevalence of the informal economy and other measurement errors may undermine the accuracy of official data sources. The multiplier analysis for Pakistan is based on the SAM for the year 2007–08. Although, this is outdated to render the current socio-economic structure in the country, the 2007–08 SAM is the most recent and publicly available data for Pakistan.

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 both for the daily social reproduction of market labour. Therefore, any adverse impact on care work due to violence would also indirectly impact the market labour offered by other members of the household. Economic theory, and economic policy analysis, has 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 missed care work on paid market labour of the household due to VAWG. We focus mainly on absenteeism and the resultant loss of income to the women (direct loss) and to the economy as a whole (macro-economic loss). However, we do estimate the direct loss due to presenteeism and household production and care work from the women's survey, and we report these results in the following.

4.1 Direct losses due to violence

4.1.1 Direct income loss due to absenteeism

In this analysis, loss of earned income due to violence against women of working age is the main concern. Estimating the number of working days missed due to violence from the field survey requires a different approach in the case of Pakistan. Only a few cases (only three in total) that reported the number of days missing due to domestic violence are observed, despite up to 56.8% of women reported to have experienced the violence in previous year. As a result of gross under-reporting of the days missed due to violence, an imputation is devised to indirectly estimate the loss of days from a general question on the number of days missing for various reasons, such as family, health, other emergencies, etc. The violence was not listed as one of the reasons in these questions.

Table 6 displays the direct loss of absenteeism due to violence against women. Note that the violence includes both IPV and other types of violence by other family or

community members. In the case of Pakistan, due to suspected under-reporting of incidence of violence, we aggregate all types of violence to achieve statistical significance in our estimation. The number of female workers having reported absenteeism due to violence is a product of the percentage point of women who experienced violence and total number of employed women in rural and urban areas respectively. Over 5.9 million and 566,000 employed women in rural and urban areas, or a total 6.5 million female workers, have missed their paid work as a result of violence.

In terms of number of working days, these women in rural and urban areas missed over 24.2 and 5.5 million days and, in total, 29.7 million paid work days in 2017. Despite the larger number of women in rural areas who experienced absenteeism due to violence, their number of days lost is smaller than their urban counterpart, resulting in a smaller average number of days lost in rural areas. The monetary losses among rural and urban women due to absenteeism are estimated to be PKR14,507 and 3,291 million (USD\$142.1 and 32.2 million), respectively, and PKR17,798 million (USD\$174.3 million) or 0.056% of GDP, in total.

Table 6 Direct loss of absenteeism: working days and earnings

	Rural	Urban	Row total
Number of victims	5,978,353	566,420	6,544,773
Number of days lost	24,272,112	5,505,604	29,777,716
Lost earnings (million PKR)	14,507	3,291	17,798
Lost earnings (million USD)	142.1	32.2	174.3

Source: Authors' calculations.

4.1.2 Direct loss due to presenteeism

Table 7 displays the significance of the implicit cost of violence in the form of presenteeism. Over 6.5 million female workers reported their productivity was compromised due to violence against them, and it is equivalent to 33.5 million working days. The implicit value of the presenteeism is imputed to be almost PKR20.1 million, or 0.09% of GDP. The loss is particularly large among rural women as most female victims reside in rural areas in Pakistan. Note that the loss due to presenteeism is implicit in nature, as it is not directly accounted for like absenteeism.

In addition, the loss is an underestimation since labour cost is only a part of the total value of the output.

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 labour 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	5,978,353	566,420	6,544,773
Number of days lost	30,728,733	2,849,093	33,577,826
Lost earnings (million PKR)	18,367	1,703	20,069

Source: Authors' estimation from the field survey and the GLSS, sixth wave.

4.1.3 Direct loss due to missed household production and care work

Table 8 shows an implicit value of loss of household production due to violence against women. In total, over 10.5 million days of household production by women were lost which is approximately 0.23% of total household production days (0.23% of total days for women in 2017) under the assumption that the activity is conducted 365 days a year. In terms of implicit monetary value, the loss is imputed to be almost PKR5.3 billion, or 0.02% of GDP. Note that the loss in rural areas accounts for over 93% of total loss. The disproportionate loss in rural areas may reflect the higher prevalence of violence and the higher portion of women engaged full-time in household production and care work in rural areas than women in urban areas.

Table 8 Imputed loss (household production): working days and values

	Rural	Urban	Row total
Number of household production days lost	9,858,840	693,822	10,552,662
Lost earnings, imputed (million PKR)	4,929	347	5,276

Source: Authors' estimation from the field survey.

The losses due to presenteeism and missed household production are implicit costs of violence. Though the losses are real in terms of lost productivity and quality of life, these losses cannot be translated directly into macroeconomic costing.

Taking all the three dimensions into account, the total direct loss due to violence against women 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 PKR	% of GDP
Absenteeism	17,798	0.056%
Presenteeism	20,069	0.063%
Household production and care work	5,276	0.02%
Total direct income loss	43,144	0.135%

Source: Authors' estimation. GDP in 2017 was approximately PKR 31,963 billion

The total direct loss due to violence is 0.135% of Pakistan's GDP in 2017, which is the minimum loss to the economy to the extent that both the 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 the households, businesses, the government and foreign sectors. 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 family. The interconnected nature of the economy implies that there is more to the cost incurred to the whole economy through multiplicative linkages among all sectors except agriculture and mining. We impose the same supply constraints as we did in the case of Ghana. 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 the ‘multiplier loss’ in the literature (Raghavendra, Duvvury and Ashe, 2017).

The direct income loss of the victims is PKR17,798 million, or 0.056% of GDP in 2017 (see Table 10). In the case of Pakistan, after accounting for leakages through income taxes and household savings which together account for 24.1% of total household expenditure of the households, the remaining household income is assumed to be spent all on goods and services. Through the multiplicative linkages between the net household consumption and productive sectors, as well as among productive sectors, the direct loss compounded into the economy-wide indirect loss of gross domestic production amounting to PKR9,331 million, or 0.03% of GDP. This is almost 52% of the direct cost, or 34% of the total cost. In other words, for every 1 rupee loss in income to the household due to violence, an additional loss of 52 paise is incurred in the rest of the economy. In total, taking both the direct and the indirect losses, the macroeconomic loss due to violence against women is estimated to be PKR27,130 million, or 0.085% of GDP in 2017 (see Table 10). In other words, the national GDP in 2017 could have been 0.085% higher than it was, were it not for the violence against women.

Further, the direct and indirect losses due to violence also inflict a 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. In the case of Pakistan, the loss of fiscal revenue due to VAW amounts to 1,158 million rupees, or 0.02% of government total revenue in 2017.

Table 10 Macroeconomic loss due to VAWG, Pakistan

	Million PKR	% of GDP
Direct income loss	17,798	0.056%
Indirect income loss	9,331	0.029%
Indirect/direct ratio	5,276	
Macroeconomic loss	27,130	0.085%
Fiscal revenue loss*	1,158	0.02%

*Fiscal revenue loss as percentage of government revenue in 2017.

Source: Authors' calculations.

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4.3 Sectoral loss

The analysis of the sectoral distribution of the multiplier-induced indirect costs would highlight the pathways of propagation of the impact of VAW on the overall economy. Table 11 reports the sectoral analysis and shows the impact on different sectors due to violence against women. 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 the multiplier effects of these sectors and set to zero. Therefore, our estimate of the macroeconomic loss is an underestimate in the absence of a major sector like agriculture and consequently treated as a lower-bound estimate.

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, sales and transportation, public administration (government), education and health, and other services. Food processing includes industries related to manufacturing of food stuff and beverage; sales and transportation

includes wholesale and retail, all modes of transportation (i.e. land, marine and air transport) and storage; and other services include information and communication, finance and insurance, real estate activities, business services, and other personal services.

In terms of the sectors that exhibit major losses, the food processing sector is the most, followed by manufacturing and service. The loss of sectoral GDP in the food processing sector amounts to PKR4,110 million, which accounts for 44% of the total indirect loss of GDP, and 43% of household income or PKR3,810 million (see Table 11 and Figure 4). The loss in manufacturing follows closely at PKR2,996 million and PKR2,840 million in GDP and household income.

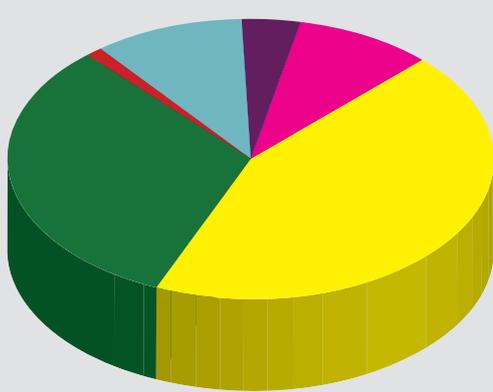
Table 11 Sectoral distribution of indirect costs, Pakistan (million PKR)

Million PKR	Food	Manufacturing	Construction	Sales/Transport	Gov't/Ed./Health	Other services
GDP	4,110	2,996	74	976	335	840
Income	3,810	2,840	70	930	322	801

Source: Authors' calculations.

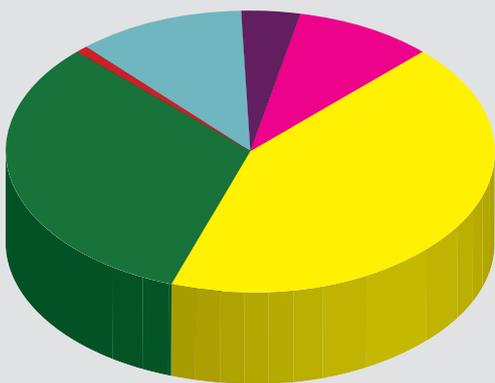
Figure 4 Distribution of indirect costs by major sectors (share of total indirect loss)

SECTORAL OUTPUT SHARES



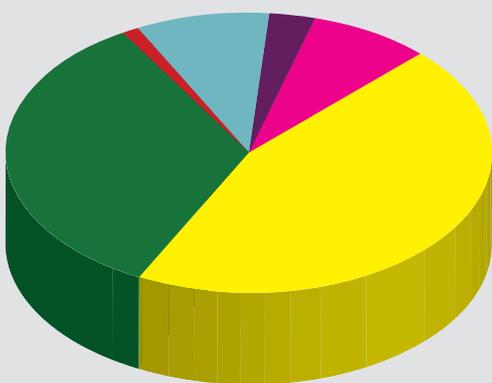
■	44 % FOOD PROCESSING
■	32 % MANUFACTURING
■	1 % UTILITIES
■	10 % FOOD SERVICES / ACCOM
■	4 % CONSTRUCTION
■	9 % GOV'T/EDU/HEALTH

HOUSEHOLD INCOME BY SECTOR



■	43 % FOOD PROCESSING
■	32 % MANUFACTURING
■	1 % UTILITIES
■	11 % FOOD SERVICES / ACCOM
■	4 % CONSTRUCTION
■	9 % GOV'T/EDU/HEALTH

TAX REVENUE BY SECTOR

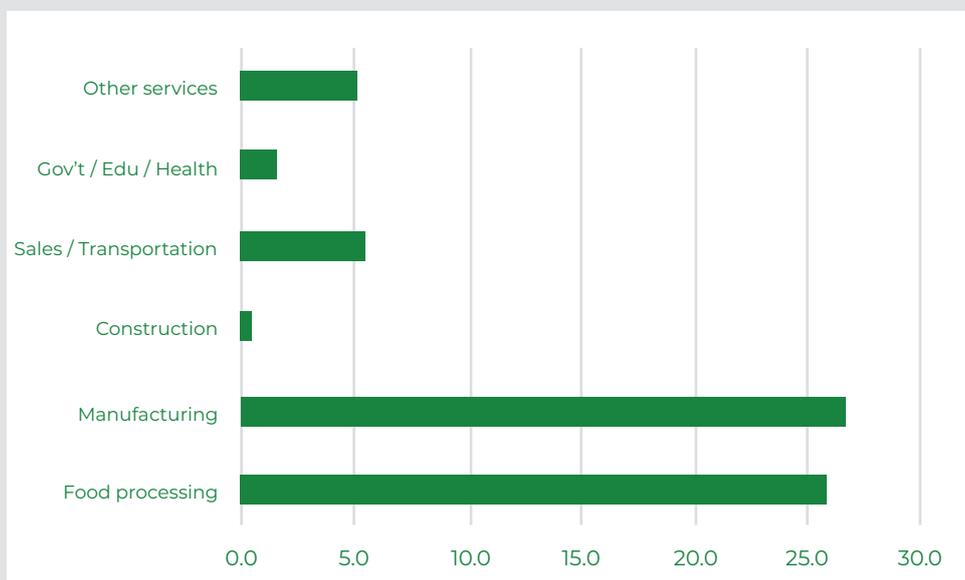


■	45 % FOOD PROCESSING
■	34 % MANUFACTURING
■	1 % UTILITIES
■	9 % FOOD SERVICES / ACCOM
■	3 % CONSTRUCTION
■	8 % GOV'T/EDU/HEALTH

Source: Authors' calculations.

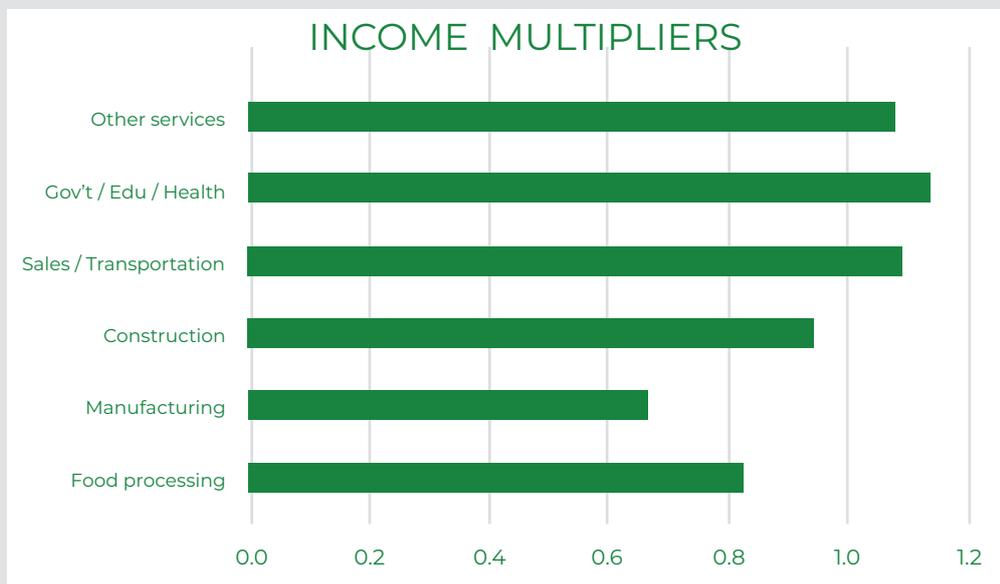
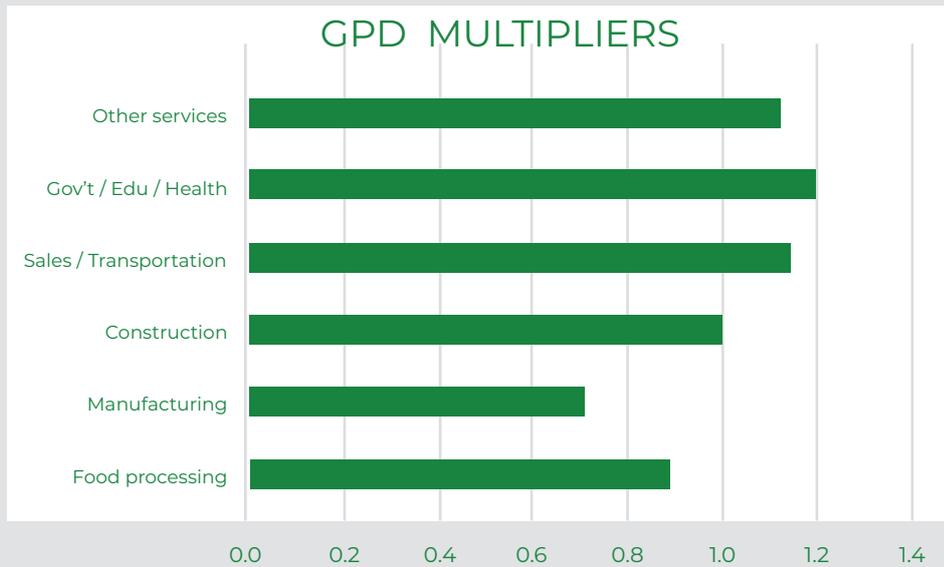
The main determinants of the sectoral loss are the composition of household expenditure and the sectoral multipliers. The composition shows the first-round impact of the direct loss on sectoral output, and the multipliers determines the subsequent impacts from the multiplicative linkages between the sectors. Figure 5 shows the detailed composition of household expenditure in Pakistan. Manufacturing goods and processed food items account for 26.7% and 25.8% of total household expenditure respectively. However, Figure 6 shows that sectoral GDP multipliers of these two sectors are smaller than GDP multipliers of other sectors, such as sales and services, whose goods account much smaller shares of the household expenditure.

Figure 5 Detailed distribution of household consumption (percentage of total expenditure), Pakistan



Source: Authors' calculations.

Figure 6 Sectoral GDP multipliers



Source: Authors' calculations.

4.4 Cumulative loss to GDP and the cost of inaction

Our analysis reveals that the macroeconomic loss due to VAW is 0.085% of GDP in 2017. 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 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 0.02% of the total government revenue in 2017, or in other words, the potential additional revenue that the government could have earned is 0.02% of the actual total revenue in the absence of violence.

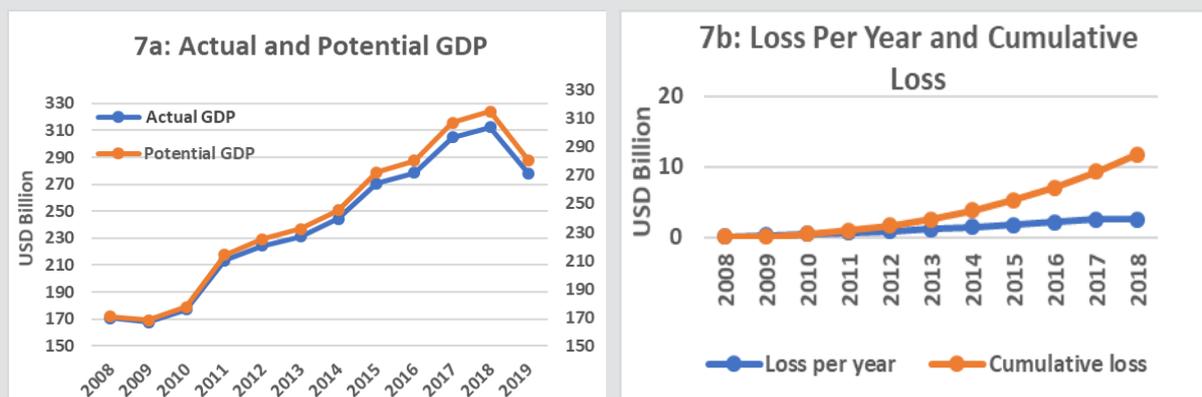
Note that these are costs to the economy in spite of the existing level of service provisioning for the women survivors of violence and is a permanent “leakage” from a macroeconomic point of view. The size of the leakage is the difference between what the economy could have earned in the absence of violence,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

Using the actual and predicted GDP data for Pakistan from 2008 to 2019 provided by the IMF’s World Economic Outlook, we estimated the cumulative cost to the Pakistan’s economy over a period of time.¹⁵ Assuming the loss to GDP due to VAW remains at 0.085%, we estimated the potential GDP and the cumulative loss of GDP to the Pakistan economy in Figure 7. Figure 7a shows the actual and the potential GDP of Pakistan 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 GDP and the actual GDP widens due to the compounding effect.¹⁶ Starting from a trivial 0.085% of GDP in 2008, the cumulative loss of GDP over a eleven-year period, say between 2008 and 2019, grows to about USD\$11.787 billion, which is about 4.2% of the projected GDP for 2019. In other words, the potential cumulative cost of eleven years of inaction could cost up to 4% of the GDP in 2019.

15. Estimations are provided in Appendix 3, Table A.4.

16. See Appendix 2 for the derivation of potential GDP.

Figure 7: (a) Actual and potential GDP in Pakistan, (b) Cumulative loss to GDP (in billion USD)



Source: Authors' calculations. GDP growth rates and projected growth rates from World Economic Outlook, October 2018, IMF.

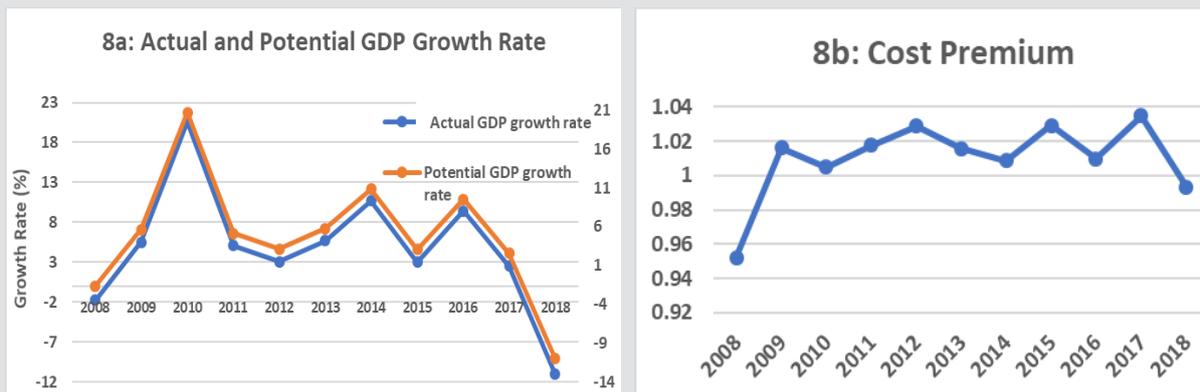
Furthermore, we can also estimate the costs of violence to economic growth. Since the difference between the potential and actual GDP is the income needed to offset the loss to GDP due to violence, we can now pose the question in growth terms. For a given loss of GDP, what is the rate of growth an economy 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, that could have been achieved by an economy for it to grow at its potential and is calculated as¹⁷

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

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

17. See Appendix 3 for the derivation of the growth premium.

Figure 8: (a) Actual and potential growth rates, (b) Cost premium to growth



Source: Authors' calculations.

Using the actual and projected GDP growth rates between 2008 and 2019 for Pakistan, we estimated the cost premium for the Pakistan economy and is shown in Figure 8a and 8b. The right-hand side 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 the corresponding period. To interpret these values, let us consider a few cases in Figure 8b. In 2012 the actual growth rate of Pakistan was reported to be 3.05%. The factor value for 2013 is 1.02876, which indicates that the Pakistan economy should have achieved an additional 2.8% of the actual growth rate, i.e. should have grown at 3.13% in order to nullify the loss of GDP due to violence. Similarly, in 2016, the actual growth rate of Pakistan was to be 2.99%. The factor value of 1.02925 in 2015 indicates that the Pakistani economy should have grown at an additional 3% of the actual growth rate, i.e. should have achieved a growth rate of 3.08% in order to have offset the loss of GDP due to violence.

Figure 8b shows that in those years when the Pakistani economy slowed down, the downturn in the economy could have been less severe in the absence of violence, which is indicated by the multiplicative factor being less than 1. For example, in 2009 the Pakistan economy's actual growth rate was -1.74%. The factor value of 0.95208 in 2009 implies that the Pakistan economy would have shrunk by -1.65% if there was no loss due to violence against women, i.e. by a lesser rate than it did. Therefore, even with the assumption of a constant loss of GDP, the cost premium imposed by violence varies relative to the actual rate of growth – the lower the growth, the higher the cost premium and vice versa.

5. CONCLUSION

Violence against women and girls (VAWG) is a widely recognised human rights violation with serious consequences for the health and well-being of women and their families. Even though VAW is widely accepted as a fundamental human rights and public health issue, the wider ramifications for businesses, economy and society are not well explored. The recent UN Declaration on the new Sustainable Developmental Goals (the 2030 Agenda for Sustainable Development) is the first time that the issue has been explicitly incorporated into the global development policy agenda. However, 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 the next challenge. In this report, we develop a comprehensive analytical framework to estimate and articulate the ramifications of VAW on the wider macro-economy.

This paper argues that the productivity loss associated with violence against women has significant short and medium-term impacts on the economy. The impact of VAWG on women's productivity is widely recognised as profound, long lasting, and often an outcome of the increased likelihood of poor physical and mental health of survivors of violence (Duvvury, et al. 2013). However, there is little research to measure productivity loss in the existing costing studies, with the majority primarily focusing on short-term absenteeism as the main source of reduced output for the economy. In this study we have extended the analysis by measuring presenteeism (being less productive while at work) and missed unpaid household production and care work as two other sources of output decline associated with VAWG.

One of the main contributions of the paper is to estimate the total macroeconomic loss to the economy arising from the loss of income to women due to VAW. To that extent our analysis has pushed the boundaries of the existing methods in the literature by using the social accounting matrix, which enabled us to estimate the multiplier effect of the micro-level income loss due to VAW on the wider economy. An innovative aspect of this approach is that it provides insights into the key sectors that contribute to the macroeconomic loss, providing useful information for sectoral investments. Finally, the analysis also shows that the loss due to violence is not just a once off leakage from the macroeconomic circular flow but imposes premium

to economic growth, i.e. it shows 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.

While our aim here is to develop a systematic analytical framework to study and highlight the often-ignored issue of violence against women in economic analysis, either for lack of theoretical development or for lack of political conviction, it is only a first step in this direction. The framework developed herein, and the analysis, is limited to the extent that it provides estimates at a point in time and does not take into account the temporal dimension of the impacts due to violence against women and girls (VAWG). The loss would be even higher if we could have included a wide range of costs of violence such as on capabilities via chronic pain and suffering of women survivors or the intergenerational impact on children and their human capital development. However, empirical estimation of such impacts requires theoretical development in terms of the human capital growth models and providing rigorous analytical framework to incorporating the intergenerational impact and test for permanent growth effects of violence against women and girls. Even with this caveat, the analysis presented here is revealing and rigorously reinforces the simple, yet powerful, message that VAWG inflicts a permanent and yet invisible drain on the economy which affects the well-being and the quality of life women, their families and communities.

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APPENDIX 1: SAMPLE STUDIES OF COSTING

Sample studies using key approaches to estimates costs of Intimate Partner Violence drawn from Ashe, S., Duvvury, N., Raghavendra, S., Scriver, S. and O'Donovan, D. (2016), Methodological approaches to estimating the economic costs of violence against women and girls, Working Paper 3, What Works to Prevent Violence programme, available at: www.whatworks.co.za/resources/project-resources/item/283-methodological-approaches-for-estimating-the-economic-costs-of-violence-against-women-and-girls

Table A.1 Sample studies based on accounting approach

Author	Country	Cost	Cost categories
ICRW (2009)	Uganda Morocco Bangladesh	USD\$5 in Ugandaa USD\$157 in Moroccob USD\$5 in Bangladeshc	Health; Police; Justice; Local informal authority; Social services.
NCRVAW&C (2009)	Australia	AUD\$13.6 billion in 2009 AUD\$15.6 billion (estimated for 2021–22)	Seven cost categories: Pain and suffering; Health; Production; Consumption; Administrative and other; Second generation; Transfers.
Zhang et al. (2012)	Canada	CAD\$7.4 billion	Medical attention; Hospitalization; Lost wages; Lost productivity; Missed school days; Stolen/ Damaged property; Judicial costs.
Duvvury et al. (2012)	Vietnam	USD\$1.41 billion (out-of-pocket expenditure and missed work) USD\$2.26 billion (productivity loss)	Medical; Police; Court; Shelter; Legal aid; Foregone earnings; Productivity loss.

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

Table A.2 Sample studies using econometric approach

Author	Country	Econometric Technique	Relationship	Central Finding
Lloyd (1999)	US	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% less than those not abused.
Hindin et al. (2008)	Ten countries: Bangladesh, Bolivia, Dominican Republic, Haiti, Kenya, Malawi, Moldova, Rwanda, Zambia, 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 A.3 Sample studies using propensity score matching method and other methods

Author	Country	Impact variable	Key Finding
Sanchez et al. (2004)	Colombia	Women's employment	Unemployment rates that were 8% higher.
Vyas (2013)	Tanzania	Women's earnings	Abused women earn less than non-abused 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. The time index is denoted by the subscript. Assume that the initial year, i.e. in our case 2010, the actual and potential GDP are equal and 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 VAW, then the potential GDP is equal to the actual GDP. For instance, the potential GDP in the k^{th} year,

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

The loss of GDP due to violence 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,

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

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 GDP loss due to violence is the difference between the potential output and the actual output for any given year. The cumulative loss over a 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% 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 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 A.4 Potential GDP, cumulative loss and cost premium estimation: Pakistan (unit: billion USD)

	Pakistan actual and projected GDP (inflation adj)	Percent loss of GDP	Actual GDP growth rate	Potential GDP	Potential GDP growth	Loss/Year	Cumulative loss	Growth Premium
2008	170.85	0.09	-	170.85	-	0.00	-	-
2009	167.88	0.09	-1.74	168.02	-1.66	0.15	0.15	0.95
2010	177.17	0.09	5.53	177.46	5.62	0.30	0.15	1.02
2011	213.59	0.09	20.56	214.10	20.66	0.51	0.44	1.00
2012	224.38	0.09	5.05	225.10	5.14	0.72	0.95	1.02
2013	231.22	0.09	3.05	232.15	3.13	0.93	1.66	1.03
2014	244.36	0.09	5.68	245.54	5.77	1.18	2.59	1.02
2015	270.56	0.09	10.72	272.07	10.81	1.51	3.77	1.01
2016	278.66	0.09	2.99	280.45	3.08	1.79	5.29	1.03
2017	304.95	0.09	9.44	307.15	9.53	2.20	7.08	1.01
2018	312.57	0.09	2.50	315.08	2.59	2.51	9.27	1.03
2019	278.02	0.09	-11.05	280.52	-10.98	2.50	11.79	0.99

Source: Authors' own calculation using the actual and forecast GDP data for Pakistan from the IMF World Economic Outlook, October 2018.

