

Socio-Economic Determinants of Female Suicide Terrorism: A Panel Study of South Asia

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Abstract

This study analyses the socioeconomic factors of female suicide terrorism in South Asia. The study utilises panel data spanning the period from 2000 to 2020. The study applied panel unit root tests, panel cointegration tests and fully modified ordinary least squares regression. The unit root test indicates that all the variables are integrated of order one. The panel cointegration tests confirmed that political stability, employment, inflation, education and female suicide terrorism are cointegrated in the long run. The study used a fully modified ordinary least squares method and found that employment does not have a significant relationship with female suicide terrorism, even though it is negatively correlated with it. The results also showed that education and political stability alleviate female suicide terrorism, while inflation is positively associated with female suicide terrorism in South Asia. The results provide policy insights to alleviate female suicide terrorism in South Asia.

Keywords: Education, Employment, Female Suicide Terrorism, Inflation, Political Stability.

Introduction

In recent years, suicide terrorism has become a particularly destructive form of political violence, with female involvement introducing new layers of complexity. The increasing participation of women in these activities challenges traditional perceptions and prompts new enquiries for researchers and policymakers. Historically, women were perceived as non-combatants in conflict zones; however, their involvement in violent extremist groups has increased, particularly in South Asia, a region characterised by political unrest, economic inequality, and active insurgent networks (Bloom & Bombshell, 2012; Jacques & Taylor, 2009). Suicide terrorism has mostly been linked with men; however, a growing number of women are participating, thereby changing perceptions of gender roles in extreme violence (Ness, 2007; Cunningham, 2003). The increasing contribution of women in suicide occurrences underlines the need to examine not only the political and ideological drives behind such violence but also the social and economic aspects that may contribute to it—the contribution of women in terrorist activities, inducements, and critical investigations concerning the important motivations for their contribution. While political effects and group pressures play extensive roles, fundamental socio-economic problems are often seen to serve as the key drivers of radicalisation (Krueger & Malečková, 2002).

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This study examines the socio-economic determinants of female suicide terrorism in South Asia, focused on four vital aspects, including female literacy, inflation, such as Consumer Price Index (CPI), women's labour force participation, the region's political stability and violence. These factors have been selected due to their established relationships with social unrest, economic marginalisation, and governance deficiencies (Krook & Norris, 2014; Piazza, 2006). The CPI act as a key element of economic stability and decreasing purchasing power, which continuously affects the lower-income group of society. Especially when economic deficiency is coupled with political displeasure, it leads to environments that foster violence and extremism, as stated by previous studies (Blomberg et al., 2004; Li & Schaub, 2004). The collaboration of these socio-economic variables thus allows for a thorough examination.

The rate of female literacy is a measure of women's empowerment and access to education. Women may face more barriers to employment and public engagement due to low literacy levels. In some cases, these limitations make them more vulnerable to extremist influences (Younas & Sandler, 2017). Economic stability is susceptible to persistent inflation, which also decreases household purchasing power. Extremist organisations may take advantage of the heightened annoyance and sense of unfairness that may arise from this (Li & Schaub, 2004). The level of gender presence in a country's economy is reflected in the percentage of women in the workforce. Outdated gender roles are more likely to be tolerated in societies where women have few economic opportunities.

In some cases, this marginalisation might encourage women to pursue empowerment through unconventional means, like political violence (Bloom & Bombshell, 2012). The lack of violence and political stability is a critical marker of a country's governance. People, mainly those who are marginalised, may turn to terrorism as a form of objection or resistance in environments with a high level of violence and weak state institutions (Goldstein, 2003). When faced with financial problems and social marginalisation, women may turn to alternate forms of self-expression, which in some instances may include violence (Victor, 2003). Inspecting the associations between gender and terrorism as impacted by socioeconomic factors is central in South Asia, which is known for its diverse political and social situations and enduring violent extremism. This study inspects the relationship between various factors and the increase in female suicide terrorism using panel data from South Asian countries from 2000 to 2024. The objective is to advance knowledge of the socioeconomic essentials that lead to female radicalisation and to make it easier to create more focused, efficient policies that stop violent extremism.

Literature Review

The increasing participation of women in terrorist acts, particularly suicide attacks, has disordered old understandings of gender roles in political violence. In South Asia, the tendency has become more pronounced, highlighting the necessity to examine the socio-economic aspects that may be contributing to it. This appraisal emphasises the effect of female education, inflation, female labour force participation, and political stability, each investigated through experiential and theoretical literature. Among the factors affecting female suicide terrorism, education is extensively considered as an essential means for empowerment and counter-radicalisation. Studies investigating female suicide terrorism have shown a negative relationship between literacy and female suicide terrorism. Krueger and Malečková (2002) examined how a lack of education contributes to the development of extremist ideologies, as well as reduced access to critical thinking and employment opportunities. Similarly, Berrebi (2007) revealed that lower educational levels are correlated with higher likelihoods of involvement in terrorism, especially among women in patriarchal societies. In South Asia, gender inequality in education persists as a significant challenge. According to Aslam (2009), socio-cultural constraints on female education in Pakistan and Afghanistan create

environments where women are particularly susceptible to manipulation by extremist groups. Lutz (2019) argues that educated women are less likely to engage in terrorism as they are more integrated into civic structures and less dependent on radicalised social networks. Female suicide bombers in Sri Lanka, for example, were often recruited from less educated or marginalised communities (Alison, 2003).

Inflation is a proxy for economic distress, which has long been linked to terrorism. Blomberg, Hess, and O'Rourke (2009) demonstrated that economic instability, including inflation, creates grievances that terrorist groups exploit. Piazza (2011) further emphasises that economic shocks, particularly rising prices and unemployment, disproportionately affect women and increase the appeal of extremist ideologies, offering a sense of purpose. Azam and Thelen (2009) argue that terrorist recruitment is often stronger in countries experiencing high inflation, as the state's inability to maintain economic stability undermines legitimacy. Empirical evidence from South Asia confirms this trend. For instance, Choi (2010) found that inflation contributes to terrorism in developing regions by creating social discontent, which terrorist groups can channel into violence. Inflation-related stress may particularly affect women in low-income households, increasing their vulnerability to coercion or ideological radicalisation (Enders & Hoover, 2012).

Women's access to the labour market is closely tied to their autonomy and societal inclusion. The absence of economic opportunities can increase susceptibility to extremist recruitment. Kimmel (2003) notes that marginalised individuals, including women without employment, may turn to terrorism as an expression of frustration or a bid for empowerment. In the context of South Asia, female labour force participation remains low due to patriarchal norms and systemic discrimination (Ness, 2007). Bloom (2005) observed that terrorist organisations frame participation in suicide missions as a path to honour and social status for economically inactive women. Furthermore, research by Caprioli (2005) links low gender empowerment and labour force participation with increased internal conflict and terrorism. Similarly, Miller and Rasmussen (2017) argue that socioeconomic stressors, such as unemployment, intersect with trauma and identity crises, particularly for women in conflict zones, making them susceptible to extremist narratives.

Political instability is among the most consistent predictors of terrorism. States with weak governance structures and poor law enforcement are more likely to experience terrorism (Fearon & Laitin, 2003). Kaufmann (2011) emphasises that low scores on political stability indicators correlate with high incidences of violence and radicalisation. Chenoweth and Stephan (2011) argue that in politically unstable environments, particularly in conflict-ridden South Asian states, women may engage in terrorism as a means of political expression or as a result of coercion. Victor (2003) documented that many female suicide bombers in Palestine and Sri Lanka acted in response to both personal loss and political grievance, exacerbated by state failure. Countries like Pakistan, Afghanistan, and Sri Lanka have faced long periods of political unrest, creating conditions in which terrorist groups have been able to grow and operate. Thus, women's participation in terrorism is influenced by a mixture of beliefs, personal experiences, and external pressure (Pape, 2006).

Methodology

The study employed panel data to examine the socioeconomic determinants of female suicide terrorism in South Asia. The study utilises balanced panel datasets for various countries spanning the period from 2000 to 2020. This study first employed diagnostic tests, such as unit root tests, to avoid biased estimation. After conducting the unit root test, the study employed cointegration tests and the Fully Modified Ordinary Least Squares (FMOLS) method to estimate the numerical coefficients. These techniques are instrumental in generating consistent and reliable findings.

The study encompasses the following variables: female suicide terrorism, female employment, inflation, political stability, and education. The following sources include the Organisation for Economic Co-operation and Development (OECD), the Chicago Project on Security and Threats (CPOST), and the World Bank (WB). The detailed description of variables and various sources is portrayed in Table 1. The unit root test allows us to determine whether the data exhibits a time trend or not. The data containing unit roots suggests that it exhibits a trend over time, and in such circumstances, the estimation leads to spurious regression. Consequently, it is essential to assess the stationarity of each variable before conducting cointegration analysis or making long-term predictions. This study uses two panel unit root tests for evaluation. Panel cointegration tests are used to see if there is a long-term relationship between the variables after confirming that they are stationary. These tests are essential for examining data that is not stationary, as they indicate whether the variables move together stably over time, even when they exhibit short-term fluctuations.

The study employs the Fully Modified Ordinary Least Squares (FMOLS) technique, along with the panel cointegration technique, to obtain the long-run results. FMOLS is a robust technique that efficiently addresses panel data problems, including endogeneity, serial correlation, and multicollinearity. By addressing these problems, FMOLS offers more accurate and reliable estimates regarding the relationships among the studied variables. The method is explicitly applied to examine the relationship between the dependent variable and the independent variables. Additionally, it also minimises errors that arise from the omission of hypothetically significant variables. From the literature, we constructed the following model.

$$FST_{it} = \beta_0 + \beta_1 \log EMP_{it} + \beta_2 \log INF_{it} + \beta_3 \log PS_{it} + \beta_4 \log EDU_{it} + \varepsilon_{it} \dots \dots \dots (1)$$

Where:

FST_{it} is the dependent variable for cross-sectional unit *i*.

EMP_{it}, *INF_{it}*, *EDU_{it}*, and *PS_{it}* represents the independent variables for cross-sectional unit *i* at time *t*, α_0 is the intercept, and β_i are coefficient of explanatory variable and ε_{it} is the error term.

Table 1: Summary of the Variables Used in the Model

Variables	Abbreviations	Variable description	Sources	
Female suicide terrorism	FST	Index computed from the following components. Female suicide attacks Incidents Number of injuries Number of fatalities	Chicago Project on Security and Threats (CPOST)	(2024)
Female Employment	EMP	Female labor force participation (%)	World Bank	(2024)
Inflation	INF	Consumer price Index (%)	World Bank	(2024)
Political stability and absence of violence	PS	Estimate of governance (ranges from approximately -2.5(weak) to 2.5(strong) governance performance)"	World Bank	(2024)
Education	EDU	Literacy rate(%female)	World Bank	(2024)

Results and Discussion

In the first step we found the descriptive statistics. For the confirmatory analysis we use the Levin, Lin & Chu and ADF-Fisher Chi-square. Pedroni tests were employed to identify the

presence of co-integration. Finally, the direction of relationship between variables is determined by using Granger causality test.

The outcomes of the Levin, Lin & Chu and ADF-Fisher Chi-square Panel unit root tests for the variables FST, EMP, INF, PS, and EDU are shown in Table 2. This includes statistics for both level and first-differenced forms. The outcomes of the testing suggest that the variables adhere to an I(1) process.

Table 2: Panel Unit Root Tests

Variable	Levin, Lin & Chu		ADF-Fisher Chi-square		Decision
	At Level	First Difference	At Level	First Difference	
FST	0.21	-4.98*	8.68	38.62*	I(1)
EMP	1.45	-2.47*	4.27	22.62**	I(1)
INF	-1.20	-9.72*	11.57	82.00*	I(1)
PS	-0.30	-5.34*	9.47	45.71*	I(1)
EDU	1.29	-6.67*	1.61	51.30*	I(1)

* and **represent significance at 1% and 5% respectively.

Similarly, table 3 shows the results of the Pedroni co-integration test, which was performed to determine if a long-term equilibrium relationship exists among the variables. According to the results of the Pedroni test, there exists a long-term equilibrium relationship among the variables.

Table 3: Panel Cointegration Tests Results

Test	Statistics	Prob.
Panel v-Statistic	1.90	0.03
Panel PP-Statistic	-2.90	0.001
Group PP-Statistic	-3.28	0.000
Group ADF-Statistic	-2.47	0.006

Table 4 contains the results of Panel Cointegration Tests. To conduct a deeper analysis of the long-term association between the variables, Fully Modified Ordinary Least Square (FMOLS) regression was applied to the cointegrated variables. The outcomes indicate a considerable long-term association between the variables.

The outcomes of FMOLS are presented in table 4. The empirical findings of this paper underscore political instability as the primary factor influencing female suicide terrorism in South Asia. A robust and statistically significant inverse connection was identified between political stability and the frequency of such attacks. This indicates that environments characterized by political turmoil and ineffective governance are more favorable for female radicalization and recruitment by extremist groups. Inflation proved to be another important contributor, as the economic difficulties increased women's susceptibility to extremist narratives. This indicates that a decrease in political stability (or an increase in political instability) substantially raises the probability of female suicide terrorism, probably because of the destabilization of the social and economic systems, which puts women at risk of being recruited by extremists.

With a strong negative value and statistical significance at the 5% level, the coefficient for Political Stability (PS) suggests that the absence of political stability is a considerable predictor of female suicide terrorism. Political instability leads to a scarcity of economic opportunities and an increase in insecurity, which can drive women towards extremist groups. This finding aligns with Bloom's (2005) research, which discovered that political instability frequently

results in the collapse of social systems, thereby heightening women's vulnerability to terrorism. In unstable environments, women are frequently deprived of fundamental rights and opportunities, leading to a heightened vulnerability to extremist recruitment (Siddique, 2012). The analysis indicated that employment and education did not have a significant long-term impact. This suggests that while these factors are often referenced in counterterrorism discussions, their influence may rely on broader social and political contexts.

Table 4: FMOLS Results

Variable	Coefficient	Std. Error	t-Statistic
EMP	-0.02	0.06	-0.38
PS	-1.54	0.40	-3.82*
INF	0.02	0.01	1.88*
EDU	-0.08	0.04	-1.91***

*, ***represents significance at 1% and 10% respectively

In summary, the findings underscore how crucial it is to maintain political stability and sound economic conditions in determining the probability of female suicide terrorism in South Asia. Tackling the underlying factors of instability, poverty, and inequality, as well as promoting social inclusion and access to education, may prove essential in reducing the occurrence of female suicide terrorism.

Conclusion

This study critically investigates the socio-economic factors influencing female suicide terrorism in South Asia, utilizing advanced panel data techniques including unit root tests, cointegration analyses, and Fully Modified Ordinary Least Squares regression. Findings indicate that political instability emerges as the predominant catalyst for female suicide attacks, fostering an environment conducive to radicalization. Furthermore, inflation exacerbates economic hardships, contributing to this phenomenon. In contrast, employment and educational attainment appear to exert negligible long-term effects. Consequently, the study advocates for a multifaceted counterterrorism strategy that emphasizes political stability and economic resilience, while also incorporating sustained investments in governance and the empowerment of women. To counter female suicide terrorism in South Asia, governments must prioritize strengthening democratic institutions, resolving conflicts, and stabilizing political conditions. Addressing economic distress particularly inflation and investing in women's education and empowerment are vital for reducing vulnerability to radicalization. Community engagement, mental health support, and inclusive development policies can further deter extremist recruitment. Regional cooperation and a gender-sensitive, research-driven approach are essential for building long-term security and stability in the region.

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