

Wartime Financing and Corporate Leverage

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Abstract

The impact of wartime finance on the leverage of corporations is analyzed in 101 different nations. Depending on the nature of the conflict, we discover that corporate leverage is affected. This research also shows that a company's ability to use debt markets in its own country is largely dependent on the level of government support it received during times of conflict. The results also show that sovereign debt restructuring and crisis, both of which have a negative influence on the cost of debt, are the primary conduits through which war funding manifests its effects. In the end, we find that the armed conflict increases the cost of debt only for small firms. The conflicts in neighboring nations are also a topic of study because of the potential for spillover consequences.

Keywords: Government Debt, Financial crowding-out, Armed conflict, Leverage

JEL Classification: E6, G01, F3, H56, D72, G24, H63, F34

1. Introduction

Armed conflicts and over-indebtedness are both current topics that strain state budgets in a number of countries. In this paper, we study their effects, both separately and combined, on corporate debt financing. Globally, there have been almost 300 instances of armed conflicts between 1946 and 2020¹. Most of them have been intrastate conflicts, which nevertheless often become internationalized because of foreign intervention.² Wars are expensive, and numerous countries worldwide prepare for conflicts with defence budgets. The current military spending worldwide exceeds that during the cold war. According to Stockholm International Peace Research Institute (SIPRI)³, world military expenditures in 2021 reached \$2 trillion.

Like any increases in government spending, military expenditures can be financed by borrowing. The latter can crowd-out the private sector (Demirci et al., 2019; Graham et al., 2015; Pinardon-Touati, 2022). For instance, Russia increased its military expenditure by 2.9 per cent (\$65.9 billion) in 2021, when it built up its forces along the Ukrainian border. Subsequently, nine months after Russia invaded Ukraine, in November 2022, Russia raised £11.4 billion by selling debt bonds to some of Russia's wealthiest investors to support the war.⁴

We hypothesize that armed conflicts influence the effect of government borrowing on corporate debt financial decisions. Armed conflicts in one country can also have negative debt financing spill over effects in the neighbour countries. Lastly, we hypothesize that the nature and types of armed conflict can exacerbate the financial crowding-out differently. Our analysis covers 53, 275 firms from 101 countries around the world, and provides valuable firm-level insights for the long-term implications of the government borrowing during armed conflicts.

¹ [UCDP Charts, Graphs and Maps \(uu.se\)](https://uu.se/ucdp-charts-graphs-and-maps). Davies, Shawn, Therese Pettersson & Magnus Öberg (2022)

² [Investment Dispute Settlement Navigator | UNCTAD Investment Policy Hub](https://unctad.org/investment-dispute-settlement-navigator)

³ [World military expenditure passes \\$2 trillion for first time | SIPRI](https://www.sipri.org), Stockholm International Peace Research Institute. Official page (25th April 2022). SIPRI databases (<https://www.sipri.org>)

⁴ [Russia borrows £11.4billion to continue funding war in Ukraine | Daily Mail Online](https://www.dailymail.co.uk/), 21 November 2022 <https://www.dailymail.co.uk/>

We find a significant negative effect of armed conflict on corporate leverage. But, when we interact the dummy variable armed conflict with government debt, we find a significant positive effect of gross government borrowing on corporate borrowing in times of armed conflicts. To study reasons behind this positive relationship, we test if the effect may depend on the nature or the type of armed conflicts, source of government debt and other ways the government may use to finance its military forces.

When a country is at war with another, the government frequently has access to external debt from its allies, but domestic enterprises may only access debt if the government or another public institution guarantees their debt. But when the government and the rebel group are at odds, foreign nations may back the rebels in an effort to change the political system or topple the government. It is common for foreign lenders to lose faith in governments like these, resulting in limited opportunities for external borrowing. It is possible that the government can not afford the war with anything except domestic debt and tax income. We also analyse the effect of armed conflict on corporate debt borrowing based on the size of the firms. We find that armed conflict increases the cost of debt only for small firms. This is because of the large-scale intervention of the government to save the financial system from collapse is heavily biased toward the largest firms (Baines & Hager, 2021).

Recent literature indicates a concern for excessive government borrowing, and its effect on availability of debt in the private sector (Demirci et al., 2019; Graham et al., 2015; Pinardon-Touati, 2022). “Also, several recent studies link political or economic uncertainty to corporations’ decisions on external financing (Ashraf & Shen, 2019; Chan et al., 2021; Colak et al., 2017, 2018; Datta et al., 2019; Francis et al., 2014; Gungoraydinoglu et al., 2017). The study by Colak et al. (2018) indicates that uncertainty dramatically slows down firms’ adjustments toward their optimal capital structure”. Studies on the current geopolitical uncertainty studied by Ben-Nasr et al. (2020), Datta et al. (2019b), Khoo & Cheung (2021),

and Pan et al. (2019) are also relevant to our work. However, while those papers use either newspaper coverage or election data as metrics of political uncertainty, we capture geopolitical uncertainty through an armed conflict dummy developed by (Gleditsch et al., 2002). Secondly, we add measures of government borrowing, and interact them with the armed conflict indicator. Temin and Voth (2005) investigate the impact of wartime financing on private credit markets during the British industrial revolution. However, they only focus on London's Goldsmith Bank and Hoare's Bank. Thus, not much is known about government borrowing and corporate leverage during armed conflict in a wider international setting.

In conclusion, we add literature knowledge in many ways. First, a global sample of countries is used to analyze government borrowing and business debt financing choices. Considering the consequences of a broad range of government debts and disparities in the institutional environment is made possible by using data from both developed and developing nations. Second, the mechanism by which the impact of public debt on the financial choices of enterprises in a cross-national context varies depending on the nature and type of armed conflict was uncovered. Third, confirm the detrimental impact on debt financing in neighboring nations due to wars in the central country. The remainder of the article follows this structure: Our hypothesis are developed and the relevant literature is discussed in Section 2. Our empirical applications and models use data and variables described in Section 3. Section 3 also includes descriptive statistics. In part 4, we present an empirical evaluation of the war, the public debt, and the financing of the corporate debt. It is in this section 5 that we put robustness tests to use. In this study, we use instrumental variables, diff-in-diff, closest neighbor, and the Abadie-Imbens matching approach. Section 6 is our conclusion.

2. Literature review and hypotheses development

Geopolitical uncertainty affects the cost of financing (Gungoraydinoglu et al., 2017; Saffar et al., 2019) and bond financing (Guo et al., 2017), while the international political uncertainty

increases the risk premia demanded by global bond traders and government bond yields. “Different measures of political exposure reflect different levels of information asymmetry between lenders and borrowers (Francis et al., 2014a; Nikolaev, 2018). The higher political uncertainty is associated with lower corporate leverage”.

Other studies on sovereign debt risk focus mainly on its determinants and impact. For example, Cantor and Packer (1996) analyse Moody's and Standard and Poor's ratings, a proxy for sovereign debt risk. “They conclude that higher ratings are related to high domestic debt, low external debt, and absence of default history. Subsequent studies unveil additional determinants of ratings, such as political business cycles (Block and Vaaler, 2004), and monetary policy regimes (Balima, 2020)”. Armed conflict increases the business of war supplies, which increases borrowing, and this in turn may limit access to fixed interest rate. According to Délèze and Korkeamäki (2018) limited access to fixed rate financing complicates firms' efforts to match the interest rate sensitivity of their liabilities with that of their assets.

2.1. Geopolitical uncertainty and corporate financing

“Geopolitical risk is the risk associated with wars, acts of terrorism and conflicts within and between nations (Caldara & Iacoviell, 2022; Khoo & Cheung, 2021). Such risk may create uncertainty about potential policy changes in both the financial markets and the government sector and their potential impact on future economic environment. As a result, geopolitical risks can increase financial volatility, disrupting companies' planned activities and worsening financial tensions. Prime examples are the 9/11 terrorist attacks and the Russia-Ukraine conflicts of 2014 and 2022”.

Since banks lend less when political uncertainty rises, geopolitical unpredictability is connected to business funding (Bordo et al., 2016; Raunig et al., 2017). Demand-side effects include enterprises cutting down because of rising financing costs associated with increased

uncertainty (Huang et al., 2015; Li et al., 2018). From a supply-side viewpoint, corporations' future cash flows are more variable in times of high geopolitical uncertainty and the knowledge gap between corporate borrowers and lenders rises. As a result of this uncertainty, lenders have a tendency to tighten the credit supply and increase market borrowing rates (Francis et al., 2014).

Some ways exist via which geopolitical unpredictability might cause financial crowding out of government debt. For example, people have a banking crisis, an increase in nonperforming bank loans, a decrease in bank deposits, and a decrease in liquidity and fiscal channels. Moreover, banks' capacity to support financial intermediation and payment systems is weakened by geopolitical uncertainty, which in turn impairs the performance of the financial industry (N'Diaye & Gulde-Wolf, 2019; Ouedraogo et al., 2021; Rother et al., 2016). In addition, Temin and Voth (2005) demonstrate the crowding out impact of government borrowing, which is particularly significant in times of war. Considering these other studies findings, we hypothesize our first hypothesis:

H₁: The armed conflict affect negatively corporate leverage, and it influences the financial crowding-out effect of government debt.

2.2 The nature of armed conflicts

Each generation in the 20th century has had to deal with the ongoing military struggle. The economic devastation caused by these wars is still quite real, although it varies widely from country to country. The level of violence in a given area is proportional to the strife that exists there. Armed conflicts concerning the political system or replacement of the central government may weaken the financial sector's performance (Rother et al., 2016). Recently, N'Diaye and Gulde-Wolf (2019) indicated that this kind of armed conflicts result in lower credit to the private sector. The armed conflict also deteriorates banks' balance sheets, generates

inefficiencies in banks' operational management, and affects the allocation of asset and liability. On the other hand, Hasanov and Bhattacharya (2019) confirm that countries with higher government stability tend to have a lower likelihood of a financial crisis. Other studies also indicate how coup d'état affect countries' economic and financial activities (Balima, 2020; Bove & Nisticò, 2014; Leon, 2014; Meyersson, 2016). For instance, Balima (2020) confirms that the existence of coups d'état significantly decreases sovereign credit ratings in coup d'état countries compared to non-coup d'état countries. A gloomy perspective is reflected by this decline. Coups are more common under authoritarian governments, therefore their impact is more pronounced in such settings. Democracies are less likely to experience them, and when they do, they are less likely to be successful or to damage the national credit rating or economic growth rate. Based on the above arguments, we formulate our second hypothesis:

H₂: The nature of armed conflict can exacerbate the financial crowding-out differently.

2.3 The types of armed conflicts

In addition to the material destruction, the intrastate armed conflicts result in a deep economic recession or financial crisis rooted in high inflation, exacerbated in both fiscal and monetary positions, and lower institutional quality (Ouedraogo et al., 2021; Rother et al., 2016). The intrastate armed conflict necessitates weakening investor and consumer sureness and trade disturbance. As a result, the intrastate armed conflict has an impact on per-capita over time. In addition to that, intrastate conflicts have negative spill overs on nearest or bordering countries, whose average GDP growth declines by about one percentage (N'Diaye & Gulde-Wolf, 2019). For this hypothesis, we investigate how the types of armed conflict can exacerbate the financial crowding-out, a channel that has received no attention in the literature. The literature has primarily focused on the potential consequences of risks of a country's instabilities or wars on other socio-economic outcomes. However, several studies show that armed conflicts adversely affect the countries' long-run economic performance (see (Alesina & Perotti, 1996; N'Diaye

& Gulde-Wolf, 2019; Ouedraogo et al., 2021; Qureshi, 2013; Rother et al., 2016)). Dumbfoundingly, to our knowledge, there is no study on potential impact of the types of armed conflicts on the financial crowding-out of government debt. This is the motivation to develop our third hypothesis:

H₃: The types of armed conflict can exacerbate the financial crowding-out differently.

2.4 Political uncertainty's spill over effect

One major cause of the increased volatility of international capital flows is the rise in political instability in a single country. Large financial and macroeconomic consequences are predicted to be seen by other countries in response to unexpected changes in political uncertainty. By way of illustration, a drop in value of the local currency of other emerging market countries follows a rise in political instability in the United States (Bhattarai et al., 2020). And it causes long-term interest rate spreads to widen, which in turn reduces capital flows to other developing market countries (Bhattarai et al., 2020; Trung, 2019a). The economic cycle of the global economy is very sensitive to shocks associated with political instability. However, the characteristics of the recipient nations and the varied forms of political uncertainty drive the variation in the spillover effects among countries. Uncertainty caused by politics in one major economy may affect economies throughout the world (Bhattarai et al., 2020; Carrière-Swallow & Céspedes, 2013; Gabauer & Gupta, 2018; R. Gupta et al., 2016; Trung, 2019a, 2019b; Yin & Han, 2014). However, none of them relate geopolitical indicators like armed conflict to public and private debt. Based on the above arguments, we formulate our fourth hypothesis:

H₄: The armed conflicts in one country can have negative debt financing spill over effects in the nearest or bordering countries

3. Research data and methods

In this section we explain our main variables of interests, our data sources, and our methodology. We focus separately on armed conflict variables, government debt, macro-level,

and firm-level variables, and we explain our empirical methodology. At the end we also present the summary statistics.

3.1 Armed Conflict

“The armed conflict data is from UCDP/PRIO armed conflict dataset codebook version 21.1 (Uppsala Conflict Data Program)⁵. UCDP/PRIO armed conflict dataset version 22.1 is a conflict-year dataset containing information on an armed conflict. At least one party is a state's government from 1946-2021. This dataset is a joint project between Uppsala university, the Uppsala Conflict Data Program (UCDP) at the peace and conflict research department, and the centre for studying civil war at Peace Research Institute in Oslo (PRIO) developed by (Gleditsch et al., 2002)”. The variable "armed conflict" is broken down into the following sub-variables by academics: 1) Incompatibility; widespread warfare throughout the nation. There is military conflict when two states cannot agree on the status of a territory, such as when one state loses control over another. 3) Disagreement over the nature or makeup of the government is at the root of this military conflict. 4) Cross-Border/Interstate: Both parties are Gleditsch- and Ward-accredited nations. 5) Conflicts inside a single state, where A is always the government and B is always a rebel organization, no outside military intervention. 6) An internal conflict in which foreign nations send soldiers to support either side; in this case, the government and one or more rebel factions.

3.2 Macro-level variables

The main variable in this study is the general government debt, which is decomposed into two parts, the domestic and the external government debt. The general government debt is measured as a ratio to the country's gross domestic product. This is henceforth referred to as the government debt-to-GDP ratio. The percentage of government debt-to-GDP is obtained from the International Monetary Fund (IMF) for all the countries under study and for a time period ranging from 1990 – 2020. Most of the other variables specific to the countries are obtained

⁵ [UCDP - Uppsala Conflict Data Program \(uu.se\)](https://ucdp.uu.se/)

⁶ [ucdp-prio-acd-181.pdf \(uu.se\)](https://ucdp-prio-acd-181.pdf)

from the IMF, World Economic Outlook (WEO), World Bank, and the global economy. European Central Bank (ECB) is the key to the European countries' macro variables. Beside the main variables, other country variables in this investigation include the inflation, exchange rate, sovereign credit rating, currency crisis, systemic bank crisis, sovereign debt crisis, and the sovereign debt restructuring.

3.3 Firm-level variables

Compustat Global and Compustat North America provide with financial data on companies, while Compustat Global Security Daily provides market data on companies. Some accounting and market data for underdeveloped nations is missing from Compustat, which hinders research. Due to the fact that yearly financial reports of corporations are the primary source of data for firm-level information in developing countries, our study employs a manual data gathering strategy to verify the veracity of data from these nations. “This study employs four measures of firm leverage: market leverage, short-term leverage, long-term leverage, and book leverage. Book leverage is calculated by dividing the total amount of debt by the book value of all assets. Total book debt as a percentage of total asset market value is the definition of market leverage”.

3.4 Sample selection and baseline model

“To assess the financial crowding-out effect of government debt during armed conflict, we collect data from both firm-level and country-level data sets of 101 countries. Our sample of firms include all non-financial firms listed on the national stock exchanges of countries over the period 1990–2020”. We dropped all companies with negative equity, missing total assets, and negative net property plant and equipment. The firms in financial, public, and utility sectors

are further not included in our sample. Our results are consistent after dropping countries with less than five firms.⁷

Our sample is divided into four categories. In terms of percentages, high-income nations account for 53.53 percent, upper-middle-income countries for 24.32 percent, lower-middle-income countries for 18.31 percent, and low-income countries for 3.8 percent.

[Table 1 and Figure 1 around here]

In our analysis, we use firm-year panel data. We estimate all equations by using ordinary least squares (OLS). We test the financial crowding-out effect of government debt during armed conflicts by estimating the following baseline model:

$$\begin{aligned} \text{Corporate Leverage}_{i,j,t} = & \beta_1 \text{Government debt} \times \text{Armed Conflict}_{j,t} + \\ & \beta_2 \text{Government debt}_{j,t} + \beta_3 \text{Armed Conflict}_{j,t} + \beta_4 \text{Country Control Variables}_{j,t} + \\ & \beta_5 \text{Firm Control Variables}_{i,j,t} + \sum_k \text{Industry} + \sum_t \text{year} + \sum_j \text{Country} + \varepsilon_{i,j,t} \quad (1) \end{aligned}$$

Our model (1) helps to analyse the financial crowding-out effect of government debt during armed conflict. Where corporate leverage indicators help us to assess how companies use leverages to finance their assets as an alternative for issuing stock to raise capital. *Government debt X Armed Conflict_{j,t}* stands for the interaction of government debt and armed conflict variables. The control variables are the natural log of GDP per capital, the natural log of exchange rate, tangibility, the natural log of assets, the Return on Assets (ROA), the market to book, the unemployment rate, and inflation. “We follow Hope et al. (2011), by adding industry, year, and country fixed effects. The standard errors are heteroscedasticity-robust and clustered at the industry level”.

⁷To ensure reasonable cross-sectional variation within a country, we drop countries that have fewer than five firms with available accounting data (See Table 18 in Appendix). After dropping these countries, 313 firm-year observations were deleted.

3.5 Instrumental variables

We use two instruments: The number of refugees fleeing due to armed conflict and proportion of opposition seats. Our instrument, the number of refugees fleeing due to armed conflict⁸, captures armed conflict effect on the country's economic activities. In line with the neoclassical growth model (Dombi & Dedák, 2019; Mahone et al., 2021), conflicts and human displacement hurt actual and potential economic growth. "This is due to their impact on an economy's endowment of physical and human capital productivity (Rother et al., 2016). Naturally, displacement and refugees fleeing to other countries reduce a home country's economic development. While our instrument "the proportion of opposition seats" captures the post-election conflict prevalent in a country, our motivation for its use comes from the divided government hypothesis. It states that the legislation is less likely to be enacted if the executive branch's party does not also hold the majority in the legislative branches of the government (Cutler, 1988; Kelly, 1993). Therefore, divided party government fuels legislative-executive conflict over control of the bureaucracy. Divided party government is also powerfully associated with fragmentation in policy implementation and government decisions (Afzali et al., 2021; Clarke, 1998; Farhang & Yaver, 2016; Gulen & Ion, 2016)".

We have shown that a higher share of opposition seats in the legislative branches is positively connected to armed conflict and negatively related to gross government debt, possibly because split governments lead to conflicts between the legislature and the executive branch. The Database of Political Institutions 2020 provides academics with information on the make-up of legislative branches in each nation in a particular year, which is used in the calculation of opposition seats (DPI2020). In order to determine what percentage of seats are held by the biggest opposition party, we divide the total number of seats held by the major opposition party

⁸ <https://www.unhcr.org/refugee-statistics>

by the total number of seats held by all parties in the house. We use a procedure called the "weak instrument test" to officially assess the quality of our instrument (Stock et al., 2005). We also stick to the criteria for evaluating instruments (see Staiger & Stock, 1997). Finally, we apply the following models for instrumental variables:

$$Armed\ Conflict_{j,t} = \beta_1 Opposition\ seats_{j,t} + \beta_2 Control\ Variables_{j,t} + \sum_t year + \sum_j Country + \varepsilon_{i,jt} \quad (2)$$

$$Armed\ Conflict_{j,t} = \beta_1 number\ of\ refugees_{j,t} + \beta_2 Control\ Variables_{j,t} + \sum_t year + \sum_j Country + \varepsilon_{i,jt} \quad (3)$$

Where, armed conflict is a dummy variable equals to 1 if there is a conflict in i^{th} country at year t and zero otherwise. Opposition seats is the proportion of the opposition seats. "We divide the total seats of the largest opposition party by the total seats in the house to obtain the proportion of seats held by the largest opposition party". For the number of refugees, we take the natural log of all refugees fleeing the country due to armed conflict in i^{th} country at year t .

3.6 Summary Statistics

Table 2 presents the summary statistics for our main variables. Panel A presents firm-level variables. The firm-level variables are book leverage, market leverage, tangibility, ROA, market to book and Lnassets. While panel B presents macro variables. For macro variables, we have external debt to GDP, gross debt to GDP, domestic debt to GDP, LnGDP per capita, LnExchange rate, unemployment, inflation, armed conflict, armed territory, armed government, interstate and intrastate. In Panel C gross debt signifies the percentage of gross government debt to GDP, external debt signifies the percentage of the external government debt public and publicly guaranteed to GDP, domestic debt signifies the percentage of domestic government debt to GDP, armed conflict is a dummy variable equal to one if there is incompatibility and zero otherwise. "Armed govt stands for armed government which is a

dummy variable equal to one if the armed conflict related to the incompatibility concerning type of political system, the replacement of the central government, or the change of its composition. Armed territory is a dummy variable equal to one, if the armed conflict related to the incompatibility concerning the status or control of a territory. Coup d'état is a dummy variable equal to one if the country has a coup and zero otherwise. Sdebt stands for sovereign debt crisis which is a dummy variable equal to one if there is a sovereign debt crisis in a country and zero otherwise. Currency crisis is a dummy variable equal to one if there is a currency crisis in a country and zero otherwise". Bank crisis is a dummy variable equal to one if there is systemic banking crisis in country and zero otherwise. External government debt to GDP is low and sovereign credit ratings are high in high-income nations. There are fewer wars and debt crises in high-income nations, but this is not the case for systemic banking crises. In the remaining three categories, we find poorer credit ratings, more intense levels of armed conflict, and a currency crisis. This is consistent with (Balima, 2020; Hasanov & Bhattacharya, 2019).

[Table 2 around here]

4. Empirical Analysis

In this section, we test our hypotheses using different statistical methods and approaches. Our main analysis focuses on the influences of armed conflicts on the financial crowding-out effect of government debt. We also test if the nature and types of armed conflict can exacerbate the financial crowding-out of government debt differently. We further test the effect of government borrowing on corporate borrowing in times of systemic bank crisis, currency crisis, sovereign debt crisis and restructuring. The method that we use in this study are ordinary least squares (OLS), Two Stages Least Square, and propensity score-matching. Through these empirical investigations, we indicate the impacts of armed conflict and government borrowing on local firms' debt in the global financial market.

[Table 3 around here]

“Government debt affects corporate debt financing by crowding out corporate bonds, which we refer to as the safety crowding-out effect, and it is consistent with existing literature findings in developed economies. The negative relationship between government debt and corporate debt results from the high liquidity and safety attributes of government debts (Zhang et al., 2022). But government debt is a useful policy instrument that helps governments achieve long-term objectives and empowers business funding. The possibility exists that the anticipated return would grow if the quantity of government bonds was increased. Government bond substitutes like corporate bonds might see a decline in issuance as well (Demirci et al., 2019; Fan et al., 2022; Graham et al., 2015; Lugo & Piccillo, 2019). The roots and primary source of war funding are both deeply rooted in the accumulation of government debt (See the first industrial revolution in England (North & Weingast, 1989)). Additionally, we highlight the inverse correlation between war and the leverages of corporations. When there is armed conflict, it influences the local economy and on local businesses' ability to get debt financing.

4.1 Government borrowing and corporate borrowing during armed conflict

This section discusses how government borrowing affects local firms borrowing during armed conflict. We make an essential distinction between firms located in countries with armed conflicts and firms located in countries with no armed conflicts. First, we check whether the financial crowding out effect of gross government to GDP is influenced by armed conflict. We run the regression described in equation (1) using gross government debt interacted with armed conflict's dummy variable equals to one if there is a war and zero otherwise⁹. We unexpectedly

⁹ Armed conflict is a dummy variable equal to one if there is a conflict in country and zero otherwise. The country has either incompatibility about territory or government. Uppsala Conflict Data Program (UCDP) defines state-based armed conflict as a contested incompatibility that concerns government or territory. Two parties use armed force, and at least one is the government of a state. Then, the conflict results in at least 25 deaths in a calendar year.

find the significant positive coefficient on the interaction term of gross government debt x Armed_conflict and all indicators of corporate leverages as summarized in table 4.

[Table 4 around here]

The ratio of total government debt to GDP includes both foreign and domestic borrowing. We investigate whether this positive correlation can be explained by differences in the origins of government debt and other potential sources of funding for the military. The government's choices for funding the war might have a bearing on the results. To finance its operations, the government may issue new currency, sell bonds to the public, or serve as a debtor to other countries. There are advantages and disadvantages to every choice. Printing new currency is seen as less damaging to a country's image than other methods of war funding. The ability to simply generate money eliminates the need for seeking formal consent from the public when making important policy choices. In this instance, governments may coordinate the creation of new currency with the country's central bank. However, this decision may end up being the most costly if inflation is allowed to spiral out of control. The administration sees tax increases at home as the most fiscally responsible way to pay for military action. It allows nations to pool resources and save on interest by lending to one another. Leaders avoid this option because they depend so significantly on popular support, particularly during conflict. As a result, they often go in a different direction. However, taxes are a good approach to pay a war when public support is strong.

Another option is called external government debt. The government uses it to call in debts from foreigners. The trade-off is being indebted to foreign currency. Over time, the country may lose its autonomy or sovereignty; this situation happens a lot in developing countries and is a risky option. Traditionally, creating war bonds via a domestic debt has been the most popular way to finance armed conflict. This type of interest-bearing security uses the home currency, which is sold to domestic and foreign investors. However, this kind of war financing has an added

price and an interest penalty as disadvantages. Each choice has its pros and cons. But ultimately, all come with political and economic consequences and the effects turn on the private sector. Thus, referring to the consequences of each option, many governments rely heavily on domestic and external borrowing.

Our dataset shows that armed conflicts have tallied debts for the countries involved. Armed conflicts intensify government borrowing as the government struggles to financially support its war activities. The creditors are paid interest on their loans by the corporations who pay off the government's debt by their corporate taxes. On the other hand, some armed conflicts also lead to inflation, which moderates the apparent cost of war by increasing available funds in the local market, which can boost economic growth. The armed conflict may also increase the moral hazards, which lead to high municipal default risk and high yields. Furthermore, asymmetric information on government debt limits market participation and risk sharing, which reduces the overall liquidity of local government bonds. Plundering is also among the ways that governments acquire assets to pay off or avoid more outstanding debt; obviously, this affects the available fund on the local market and may lead to financial crowding-out.

4.2 The nature of armed conflict and financial effect of government debt

Here, we investigate whether or not the economic impact of government debt varies with the kind of military conflict. We characterize armed conflict by distinguishing between two sorts of incompatibility: those pertaining to governance and those pertaining to territory. An armed struggle aimed at toppling the central government or rearranging the political system's power structure is offered as an explanation for the underlying political discord. Incompatibility over territory describes military conflict that arises because of differences in the legal status of a region, such as autonomy or a change in the nation-state that administers that region. Based on these definitions, we use two dummy variables, armed territory and armed government, in this analysis. All measures of corporate leverage show a positive correlation on the product of gross

government debt and either Armed government or Armed territories. Wars raise interest rates on debt, making it harder for businesses to finance their operations, but governments can always find allies to back up their budget or programs (see Abadie & Gardeazabal, 2003; Balima, 2020; Barrett, 2022; Jiang et al., 2018; Peltier, 2020; Smith, 2014). On the other hand, local private enterprises will have access to loans via private debt insured by government or other public organizations.

[Table 5 around here]

Armed territorial conflict can lock the economic potential of both financial and non-financial resources. Territorial or boundary conflicts can undermine the state's ability to exploit the resources. However, the local firms' financial risks are very complex during the armed territorial conflict. Further risk management issues for lenders include the potential for an outburst in territorial armed conflict boundaries. Indeed, fighting, or other military attention may temporarily cease private corporate debt. As a consequence, for those invested in armed conflict territories, the impact of strengthening political tensions is significant in many ways. It is difficult for the private sector to avoid taking some sort of role in conflicts and receive many economic and political consequences.

Armed conflicts based on change in political system or coup d'état in a country may influence its sovereign bond, stock market and corporate borrowing through several channels. First, conflicts may adversely affect economic growth and investment (Alesina & Perotti, 1996). Secondly, more recent research shows that conflicts cause economic downturns through increased military spending and institutional changes, and it leads to lack of fund on the local market (Bove & Nisticò, 2014; Leon, 2014; Meyersson, 2016). Thirdly, the economic downtown or low growth rate during the change of government due to armed conflict may reduce their capacity to honour present and future sovereign debt commitments, thus deteriorating bond market access requirements and local firms' credibility on the international

market. Finally, a country's willingness to honour debt obligations may also be negatively affected following a governmental armed conflict. As a governmental armed conflict may likely result in new leadership, it may negatively affect the country's willingness to repay debt obligations undertaken by previous leaders. Such situations may arise when the new leaders are not responsible for previous debt contracts. The financial market might respond accordingly because of irrational buoyancy due to the apparent political turmoil or great disturbance governmental armed conflict creates (Balima, 2020; Bove & Nisticò, 2014; Leon, 2014; Meyersson, 2016).

Government and companies may find it more challenging to honor contractual debt or other financial obligations if geopolitical uncertainty persists (Balima, 2020; Meyersson, 2016). Companies' financial choices and associated investment decisions may be influenced by their impressions of the business climate, even if they are unable to access their supply or customers (Commander & Svejnar, 2011). Companies in various nations or with varying amounts of financial stability cannot all feel the same impact from armed conflict because of its varying causes and manifestations (Petracco & Schweiger, 2012). Consider the difference in predicament between a corporation that needs to renew a bank loan and one that has adequate capital and does not require a loan and one that doesn't. Companies with a high percentage of sales paid after delivery, as well as those that have recently purchased machinery or equipment in an effort to expand operations and boost sales before to the onset of government-sponsored armed conflict, are likely to be more at risk. Briefly, the economic consequences of the nature of armed conflict affect country cost of debt and firms' financing decisions. For example, the collapse of governmental institutions might give rise to a ubiquitous failure to meet commitments and honour promises. As confirmed by Balima, (2020), the existence of coups d'état or change of government via armed conflict significantly decreases sovereign credit ratings in coup d'état countries compared to non-coup d'état countries. Such a decrease

represents a change in outlook from positive to negative. The extent of the effect of coups is more noticeable in autocratic than in democratic regimes because coups are more likely to happen in autocracies than in democracies. Even when they do occur in democracies, they are less likely to succeed or affect the sovereign credit rating or economic growth rate. Changing government through armed conflict may negatively affect debt cost only in speculative rating grade countries but not in investment rating grade countries, as the latter group of countries may have more vital institutions and solid and less volatile macroeconomic fundamentals. In addition, governmental armed conflict increases the probability of sovereign defaults. Once an armed conflict occurs, a country's likelihood of entering a sovereign crisis increases. Ultimately, the induced drop in the real economic growth and the changes in the willingness to honour contracts should be the potential transmission channels through which a change of government due to armed conflict affects both government and corporate borrowing.

4.3 The types of armed conflict and financial effect of source of government debt

In this section, we are interested in the types of armed conflict, source of government debt and corporate leverage. We test how the corporate debt financing effect of external and domestic government debt may depend on the types of armed conflict. We classify the types of armed conflict into two categories. The interstate and intrastate conflicts. We classify armed conflict as interstate, if both sides are states in the Gleditsch and Ward membership system. On the other side we classify armed conflict as intrastate, if side A is always a government; side B is always one or more rebel groups; and there is no involvement of foreign governments with troops. We also have internationalized intrastate i.e side A is always a government; side B is always one or more rebel groups; and there is involvement of foreign governments with troops. In this study, we create the dummy variables interstate, intrastate and itnl_intrastate using the above definitions. We find a significant positive coefficient on the interaction of external government debt and interstate dummy on all corporate leverage indicators. We also find a

significant negative coefficient on the interaction of external government debt and *itnl_interstate* dummy on all corporate leverage indicators. Thus, when the armed conflict is between state and state, both government and local firm have access to external debt from the war supporters or local firms have access to private debt guaranteed by government for collateral. A totally different scenario occurs when the armed conflict is between government and rebel group supported by foreign governments i.e there is an influence of foreign governments to change political system or replacing the existing government. Thus, the government will have a very limited fund from external lenders and government may choose the option of using domestic debt. Also, the government has no ability or collateral to guarantee local firms to have access to private debt, as government and corporates may have international business sanctions.

[Table 6 around here]

Also, the disparity in available resources is a cause for concern when plotting a successful uprising against an established government. The general economic reasons of international and internal armed conflicts are the international commerce and access to resources. But although the impact of trade on the likelihood of intrastate armed conflict is unclear, internal resource abundance creates incentives for such conflicts. Therefore, as part of economic or monetary interdependence, international commerce is the initial economic root of interstate and intrastate conflicts. Conflicts inside and between states are affected by international commerce in both positive and negative ways, along with a consequential impact on public and private debt (Mansfield & Pollins, 2001). The international trade penalties of nations involved in war may also affect the global economic consequences of an interstate military conflict. Companies' financing choices, credit ratings, and nations' debt markets are all directly impacted by most sanctions. Conflict between states has immediate and long-term detrimental effects on commercial activity (Hegre et al. ,2010). The benefits of commerce are diminished as a result

of the war. That is to say, economic integration and the role of global commerce in lowering the probability of war between nations are both crucial. Corporate borrowing may be affected differently by different economic sectors, with manufactured goods, particularly those produced on a large scale, potentially benefiting the most from interstate military conflicts. Similar to its influence on the underlying causes of interstate armed conflict, international commerce has a twofold impact on the origins of armed conflicts inside nations. While increasing the likelihood of small-scale military conflicts, international commercial openness decreases the likelihood of large-scale military confrontations and protracted intrastate hostilities (Martin et al., 2008). The international market may not be able to prevent the emergence of intrastate armed conflicts, but it can provide incentives for the speedy resolution of those that do arise (Blanton & Apodaca, 2007). However, long-term intrastate armed conflict is caused and fuelled by international commerce. However, international commerce has an effect on the core causes of both forms of armed conflict, including access to resources. The impact of intrastate and interstate business borrowing remains very large on the domestic debt market, which is influenced by international commerce and access to external borrowing.

[Table 7 around here]

From Table 7, we find a significant positive coefficient on the interaction of domestic government debt and intrastate dummy on all corporate leverage indicators. The invasion of a country by another may sometimes require the invaded county to focus on domestic borrowing, while there is not enough fund on the local market. Both government and private sector or local firms do not have access to debt financing on the local market. The only choice may be to borrow externally. In this study, we found a significant negative coefficient on the interaction of domestic government debt and interstate dummy on all corporate leverage indicators. Even if there is an armed conflict between a government and label group with no involvement of foreign countries, the government may borrow domestically and this option

crowds the corporate debt financing (Demirci et al., 2019; Graham et al., 2015; Pinardon-Touati, 2022).

The other reason behind the difference in the effect of the types of armed conflicts on the debt market is that infrastructures and large companies might also be targeted by armed forces, insurrection groups and less organized mobs for the control of both local and international business activities (Daza-Clark, 2021). The availability of domestic resources is another economic motivation for armed conflicts in national and international settings. Although resource scarcity commonly causes the outbreak of international armed conflict, plenty of resources can induce, increase, and sustain the ferocity of intrastate conflicts¹⁰. Anderton (2003) indicates that the primary economic interest of governments is linked with the monopoly control over foreign markets and scarce resources. Consequently, the competition over scarce resources facilitates the outbreak of interstate armed conflict. Access to abundant resources serves as one of the leading economic reasons for armed conflicts within states. In contrast to international settings, the abundance of resources may prompt intrastate armed conflicts. Some countries with abundant resources have experienced corruption and violence over resource revenues. Dorussen (2006) agrees that the causes of the economic opportunities of controlling the rents from resource blackmail are linked with intrastate armed conflicts. The armed conflict lasts longer since it is easier to sustain and finance. As the armed conflict lasts longer, its economic consequences last longer as well. The acquisitiveness is indeed a crucial factor boosting armed conflict in many countries (Keen, 2012). For instance, the availability of plenty of resources increased the risk of intrastate armed conflict in developing countries (Murshed, 2002). In such cases, access to abundant resources and international trade are both critical in the outbreak of interstate and intrastate armed conflicts. Intrastate armed conflict impedes government revenue by destroying the tax base and lowering the efficiency of tax

¹⁰ [Land, Natural Resources and Conflict: From Curse to Opportunity. An UN-EU Partnership in action](#)

administration. The intrastate armed conflict also declines the internal revenue collection and increases both government spending and external borrowing (Barrett, 2022; Chauvin & Rohner, 2009; Gobat & Kostial, 2021; S. Gupta et al., 2004; Rother et al., 2016).

4.4 Sovereign credit rating and spill over effects of armed conflict

In previous sections, we have underlined how the occurrence of armed conflicts contributes to the effect of government borrowing on corporate debt financing. We subsequently need to assess if countries that experienced armed conflict are likely to experience lower credit rating. We also test whether armed conflicts in one country could have negative debt financing spill over effects in the nearest or bordering countries. We argue that armed conflicts have negative financial consequences on financial systems and corporate debt financing. This makes it compelling to check if the crises caused by the armed conflict may have any effect on sovereign credit rating. [Table 8 around here]

We find the significant positive coefficient on the interaction term of gross government debt x NeighborConflict and all indicators of corporate debt financing. Our result is consistent with (Choi & Furceri, 2019) who demonstrate that more uncertainty in a home country simultaneously reduces the country's cross-border lending and borrowing. This means that, when the neighbour has an armed conflict, the country is forced to increase its military expenditures by increasing government borrowing. And then, when the neighbour has a conflict, private firms have a low chance to borrow without government guarantee or collateral. In this context, we call this "debt financing spill over effects of armed conflict". "NeighborConflict", is a dummy variable which equals one if both conditions are satisfied: 1) the country has no internal armed conflict; 2) the country has at least one of its neighbours, which has an armed conflict. Otherwise, our dummy variable NeighborConflict equals zero.

[Table 9 and 10 around here]

The impact of foreign currency government debt on the domestic debt market may be gauged with the aid of sovereign credit ratings. We compile information on sovereign credit ratings from the three main agencies that control the majority of the global market for sovereign credit ratings: Moody's, Fitch, and S&P. These organizations provide grades to nations on a scale from AAA (the highest credit quality) through grades of C and D. (corresponding to the lowest credit quality). First, we convert the letter ratings from S&P, Moody's, and Fitch to numerical values from 0 to 21, with 0 referring to the lowest credit rating quality and 21 corresponding to the greatest. We utilize the natural log of sovereign credit rating because (1) the log difference is close to a percent change, (2) the log difference is unaffected by the direction of a change, and (3) our data on sovereign creditworthiness is more likely to follow a normal distribution.

We collected data for sovereign debt crisis and restructuring from the dataset constructed by (Babecký et al., 2014) and revised by (Laeven & Valencia, 2018)¹¹. Data on armed conflicts were extracted from the Uppsala Conflict Data Program provided by Uppsala University. The internal armed conflicts are defined as a contested incompatibility concerning government and/or territory with the armed conflict between two parties, of which at least one is the government of a state. The database offers an intensity-scaled measure of armed conflicts, which takes the value of 1 if the armed conflict related to death in a given year is between 25 and 999, 2 if it is 1000 or more, and 0 otherwise. Based on this definition, we also constructed an additional binary variable equal to 1 if an armed conflict happens in the country and 0 otherwise, as in (Hodler & Raschky, 2014) and in (Miguel et al., 2004).

The increases in sovereign risk negatively affect cost of debt and credit rating through various channels due to the inevitable role of public debt in the financial system (Panetta et al., 2011).

¹¹ [Systemic Banking Crises Revisited \(imf.org\)](http://www.imf.org)

For example, Russia launched a military invasion of Ukraine on 24th of February 2022, two days after the invasion, Fitch ranked Ukraine's sovereign credit rating from 'B' to 'CCC'. Three months later 20th of May 2022, the credit rating Moody's Investors Service also downgraded, Ukraine's sovereign credit rating to 'Caa3' from 'B3' and lowered the outlook to negative.¹² Similar reactions by credit rating agencies are common in other different geopolitical cases. For instance, the economic effect of Turkey's failed coup d'état in July 2016 and the royal Thai army of Thailand staged a coup d'état on the 19th of September 2006^{13,14}. As these anecdotal examples show, conflict significantly increases the cost of debt for sovereigns and their likelihood of experiencing sovereign defaults. However, the effect of geopolitical uncertainty on the cost of debt depends on the types of political regime, nature of conflict, and the sovereign credit rating grade (Balima, 2020).

Table 9 illustrates a negative relationship between armed conflict and sovereign credit rating. This corroborates the findings of Balima (2020) where the change of a government via coups d'état significantly decreases sovereign credit ratings which leads to the higher cost of debt. We also show that sovereign debt restructuring, and crisis negatively affect sovereign credit rating. A sovereign debt crisis is associated with decreasing foreign credit to private domestic firms via a decline in supply as the perceptions of the country risk by lenders worsen (Arteta & Hale, 2008; Drudi & Giordano, 2000). Thus, corporate borrowing would become more expensive, and firms would decrease borrowing (Hale & Arteta, 2009). Firms would have access to debt financing via public guaranteed debt.

The causes of armed conflict include but are not limited to the political regime, change in political institutions and coups d'état. These three factors are very collated to cost of sovereign debt or credit rating. Thus, armed conflict significantly increases the cost of debt for sovereigns,

¹² [Ukraine - Credit Rating \(tradingeconomics.com\)](https://tradingeconomics.com/ukraine/credit-rating)

¹³ [Research: Rating Action: Moody's places Turkey's Baa3 issuer and bond ratings on review for downgrade - Moody's \(moody.com\)](https://www.moody.com/research/rating-action/moody-places-turkey-baa3-issuer-and-bond-ratings-on-review-for-downgrade)

¹⁴ [Thailand - Credit Rating \(tradingeconomics.com\)](https://tradingeconomics.com/thailand/credit-rating)

leading to the likelihood of experiencing sovereign defaults (Balima, 2020). The effect of wartime financing on the cost of debt steadily depends on the international politics and the credit rating grade. The literature indicates that a sovereign rating affects the re-rated country bond and stock market (Gande & Parsley, 2005; Ismailescu & Kazemi, 2010; Kaminsky & Schmukler, 2002). In addition, the change in sovereign rating also affects corporate ratings (Borensztein et al., 2013; Chen et al., 2013, 2016; Williams et al., 2013).

5. Endogeneity concerns and more robustness test

Three main sources of bias present in traditional OLS estimations are simultaneity, measurement error and omitted variable. Literature commonly refers to these issues as endogeneity problems (See Roberts & Whited, 2013; Schiozer et al., 2021). Because both government debt and armed conflict may be generated by the same sources, determining the impact of armed conflict on the financial crowding-out effect of government debt is difficult. To deal with potential issues of endogeneity, we choose to make use of the instrumental variable. For the sake of our research, we define a suitable instrument as a factor that is only indirectly related to armed conflict and business leverage. By using the proportion of seats held by the largest opposition party in parliament and the number of refugees who have fled their homes because of the conflict as instruments for armed conflict, we are able to improve the identification and increase the reliability of our findings through the use of instrumental variable regressions. We also use the Difference in Difference estimator regression to check whether allied political actions made during wartime have an effect on the corporate leverage of their enterprises. We make a dummy variable *Invade2014* count as one if the nation did not vote yes for Ukraine's territorial integrity at the United Nations General Assembly on March 27, 2014, and zero otherwise.

[Table 11, 12 and 13 around here]

We also create a dummy variable `Crimea_Year` which is a dummy variable equals to one if the year is greater than 2014 and zero otherwise. We find a significant negative coefficient on `Crimea_YearxInvade2014`, which is the interaction of the dummy variable `Crimea_Year` and `Invade2014`. Firms located in countries that supported the annexation of Crimea in 2014 have less access to external debt financing. We test whether armed conflict decreases the sovereign credit rating of the country using score matching estimator. We find a negative coefficient on our dummy armed conflict, i.e., the average treatment effect is negative. The coefficients for both the nearest neighbourhood and the Abadie-Imbens matching method are negative. Our findings are consistent after using these different proxies.

6. Conclusion

During times of armed conflict, we conduct a comprehensive investigation into the wider implications that government and business borrowing may have. We investigate this question against the backdrop of geopolitical uncertainty and rising levels of government debt over the course of the last few decades. Specifically, we are interested in determining whether or not this phenomenon has hastened the occurrence of the financial crowding-out effect caused by government debt. There have been a limited number of research conducted on the effects of government wartime financing on the financial crowding-out effect that government debt has, despite the fact that there is an extensive study evaluating the economic and financial consequences of geopolitical uncertainty. By demonstrating the impact that wartime finance has on company borrowing, we have been able to successfully fill this need. In the end, we came to the conclusion that military conflicts in one nation might have detrimental spillover financial implications on the debt financing systems of neighboring countries, which in turn inevitably impacts the financing of corporations over the long and short term.

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Table 1: Data Distribution and sample composition

Code	N	minYear	maxYear	N_Firms	NYears	Code	N	minYear	maxYear	N_Firms	NYears	Code	N	minYear	maxYear	N_Firms	NYears
AFG	18	2002	2019	1	18	GHA	170	1995	2018	15	24	NZL	2597	1990	2020	195	31
ARE	754	1999	2020	49	21	GRC	3650	1994	2020	248	27	OMN	968	2000	2019	57	20
ARG	1133	1990	2020	70	31	HKG	3190	2001	2020	303	20	PAK	5334	1994	2020	338	27
ATG	20	1999	2019	2	19	HRV	1274	1997	2020	85	24	PAN	118	1990	2019	9	30
AUS	30754	1990	2019	2566	30	HUN	395	1995	2020	37	26	PER	1600	1994	2020	85	27
AUT	1873	1990	2020	136	31	IDN	7097	1990	2019	537	30	PHL	3137	1990	2020	185	31
BEL	2560	1990	2020	169	31	IND	59740	1990	2019	3660	30	PNG	147	1990	2019	9	30
BFA	8	2012	2019	1	8	IRL	2261	1990	2020	166	31	POL	8935	1995	2020	768	26
BGD	1887	2002	2019	202	18	ISL	228	1999	2018	19	20	PRT	1140	1990	2020	83	31
BGR	643	2006	2020	58	15	ISR	6780	1990	2020	542	31	QAT	275	2001	2020	19	20
BHR	268	2001	2020	16	20	ITA	5531	1990	2020	464	31	ROU	1821	1997	2020	131	24
BHS	104	1991	2020	8	30	JAM	446	1996	2020	32	25	RUS	2708	1996	2019	212	24
BLZ	12	2006	2020	2	12	JOR	1898	1997	2020	120	24	SAU	1923	2000	2020	128	21
BRA	5180	1991	2020	351	30	JPN	78031	1990	2020	4343	31	SDN	12	2008	2019	1	12
BWA	179	1997	2020	12	24	KAZ	190	2006	2020	20	15	SEN	33	2004	2019	3	16
CAN	31581	1990	2020	3452	31	KEN	529	1994	2020	36	27	SGP	12097	1990	2020	811	31
CHE	5019	1990	2020	299	31	KOR	19200	1992	2019	1961	28	SRB	220	2009	2020	23	12
CHL	2822	1990	2020	154	31	KWT	1406	1999	2020	94	22	SVK	186	1996	2020	15	25
CHN	56291	1992	2020	3678	29	LBN	43	2001	2018	3	18	SVN	507	1996	2020	31	25
CIV	242	2004	2019	21	16	LBR	57	2000	2019	6	20	SWE	11803	1990	2020	977	31
COL	593	1991	2019	41	28	LKA	2955	1994	2020	194	27	THA	10297	1990	2020	662	31
CYP	1096	1996	2020	82	25	LTU	509	1998	2020	37	23	TTO	151	2004	2020	10	17
CZE	235	1996	2020	25	25	LUX	885	1991	2020	84	30	TUN	618	1997	2020	48	24
DEU	15202	1990	2020	1079	31	LVA	493	1998	2020	32	23	TUR	4661	1991	2020	321	30
DNK	3332	1990	2020	226	31	MAR	1016	1996	2020	60	25	TZA	120	2000	2019	8	20
DOM	5	1998	2002	1	5	MEX	2550	1990	2020	160	31	UGA	34	2011	2019	4	9
ECU	36	2004	2020	3	17	MLT	261	1998	2020	21	23	UKR	181	2007	2020	19	14
EGY	1938	1996	2020	151	25	MUS	393	1999	2020	28	21	USA	135574	1990	2020	14518	31
ESP	3158	1990	2020	212	31	MWI	24	2012	2019	3	8	VEN	210	1991	2017	20	21
EST	332	1996	2020	20	25	MYS	18042	1990	2020	1095	31	VNM	4598	2006	2019	470	14
FIN	3184	1990	2020	207	31	NAM	42	1993	2020	4	21	ZAF	5467	1990	2020	386	31
FRA	15353	1990	2020	1162	31	NGA	1414	1994	2020	107	26	ZMB	192	1990	2019	13	25
GAB	26	1994	2019	1	26	NLD	4271	1990	2020	324	31	ZWE	402	1993	2018	31	25
GBR	35450	1990	2020	3007	31	NOR	4231	1990	2020	381	31						

In table 1, we present the data distribution and sample composition. Where N stands for number of observations, minYear stands for the first year of observation in a country, maxYear stands for the last year of observation in a country, N_Firms stands for the number of the firms in each country, and NYears stands for the total number of years observed in each country. We have 53 275 firms from 101 countries and our study period is 1990-2020. Our firm year observations are 668 556. The choice of the number of countries and study period is based on data availabilityr our main variables su,ch as government debt, armed conflict, and corporate debt.

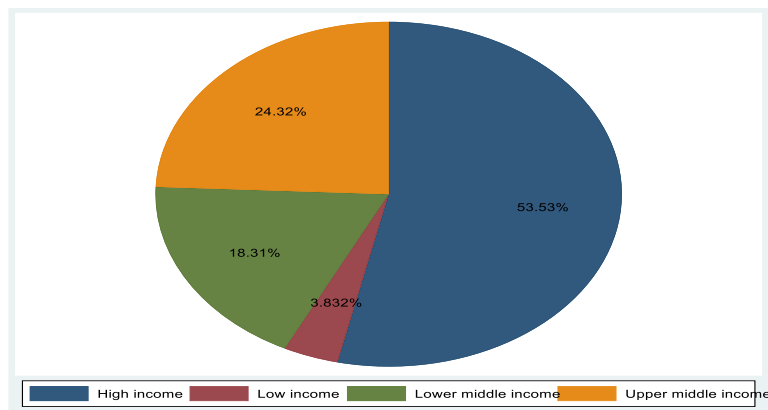
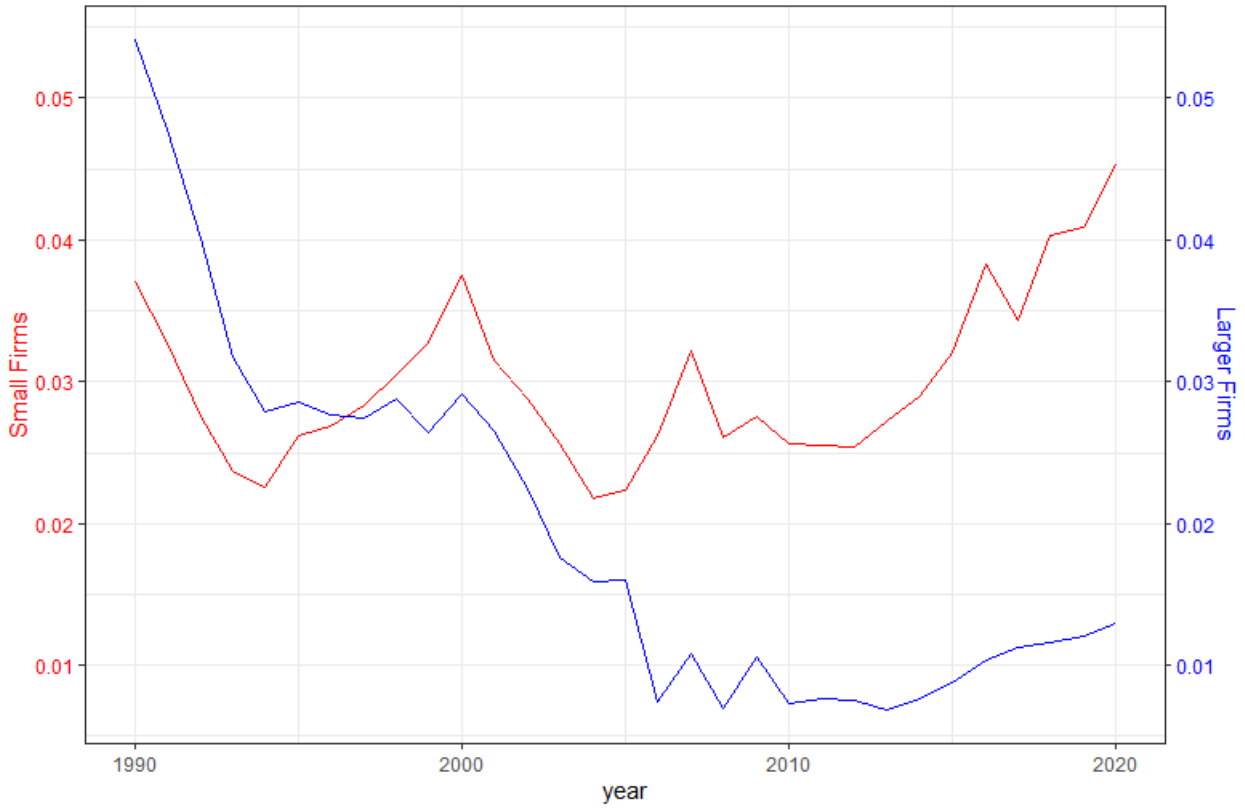


Figure 1: Income group classification

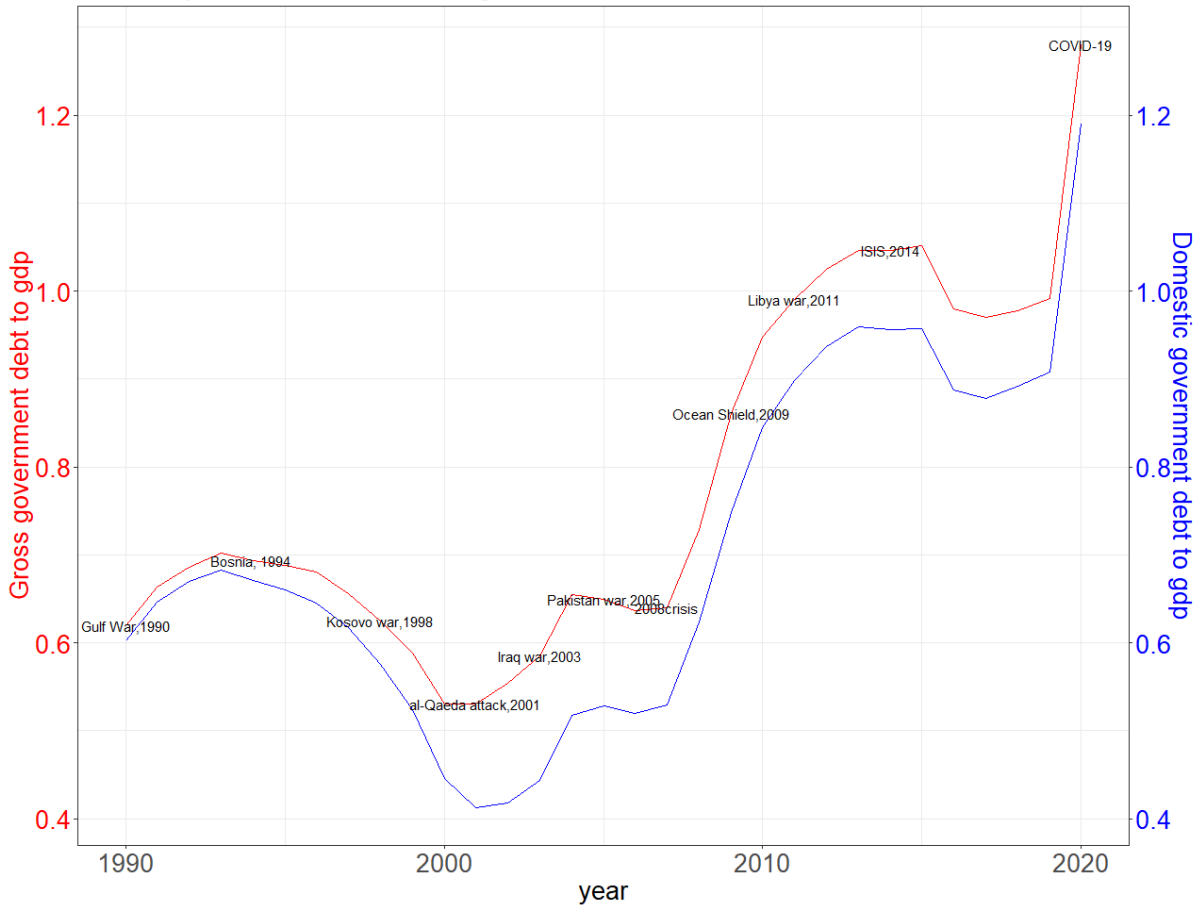
In figure 1, we classify firm-year observation into four groups. High income countries' group presents 53.53%, upper middle income countries' group presents 24.32, lower middle income countries' group presents 18.31% and low-income countries' group presents 3.83%. The world bank classifies countries' economic development into four categories—high, upper-middle, lower-middle and low-income economies. The four classifications are used to present how different categories of countries perform on measures such as growth, increasing income per head of population, and reducing poverty. Gross national income (GNI) per capita is the main indicator of how well off a country is and where it is in the four groups. For low income, gross national income is less than \$1,036; for lower-middle income, gross national income is between \$1,036 and \$4,045; for upper-middle income, gross national income is between \$4,046 and \$12,535; for high income, gross national income greater than \$12,535.

USA sample: Corporate debt servicing cost by firm size: Interest expenses/revenues



Debt servicing cost is ratio of interest expenses as the percentage of revenue. Larger firms are firms located in the 10th decile, while smaller firms are firms located in the bottom 50 percent.

USA sample: Gross and domestic government debt to GDP



This figure presents the time series of government debt for the USA data sample. This figure compares gross government debt and domestic government debt. In the figure, we indicate the major wars in which the USA was involved. In the figure, we indicate the major wars in which the USA was involved. After the Al-Qaeda terror attack, the USA was fighting terror groups, and this led to an increase in its borrowing.

Table 2: Summary Statistics

Table 2 presents the summary statistics for our main variables. Panel A presents firm-level variables. The firm-level variables are book leverage, market leverage, tangibility, ROA, market to book and Lnassets. While panel B presents macro variables. For macro variables, we have external debt to GDP, gross debt to GDP, domestic debt to GDP, LnGDP per capita, LnExchange rate, unemployment, inflation, armed conflict, armed territory conflict, armed government conflict, interstate conflict and intrastate conflict. In panel C gross debt signifies the percentage of gross government debt to gdp, external debt signifies the percentage of the external government debt public and publicly guaranteed to gdp, domestic debt signifies the percentage of domestic government debt to gdp.

	(1)	(2)	(3)	(4)	(5)	(6)					
Panel A: <i>Firm Level Variables</i>	mean	sd	p25	p50	p75	N					
Book leverage	0.20854	0.18856	0.028297	0.17629	0.33729	668,556					
Market leverage	0.18211	0.18761	0.015089	0.12537	0.29483	668,556					
Tangibility	0.30242	0.23860	0.10150	0.25574	0.45212	668,556					
ROA	0.046557	0.20686	0.021803	0.081484	0.13888	668,556					
Market to book	2.02970	2.83950	0.91155	1.22839	1.96324	668,556					
Lnassets	22.3334	5.05051	18.4523	21.4867	25.3548	668,556					
Panel B: <i>Macro Variables</i>	(1) mean	(2) sd	(3) p25	(4) p50	(5) p75	(6) N					
External debt	0.21194	0.16755	0.084332	0.17134	0.30214	2,479					
Gross debt	0.55676	0.37313	0.30802	0.48349	0.70819	2,479					
Domestic debt	0.33821	0.32386	0.11519	0.24286	0.46300	2,479					
Inflation	4.33084	4.18439	1.42911	2.92949	6.20016	2,479					
LnGDP per capita	9.04039	1.40718	8.05291	9.27566	10.2142	2,479					
LnExchange rate	2.13371	2.43368	0	1.37231	3.80910	2,479					
Unemployment	7.57161	4.85658	3.90000	6.35000	9.92000	2,479					
Armed conflict	0.14280	0.34994	0	0	0	2,479					
Armed territory conflict	0.085922	0.28030	0	0	0	2,479					
Armed government conflict	0.056878	0.23166	0	0	0	2,479					
Interstate conflict	2.4203e-03	0.049147	0	0	0	2,479					
Intrastate conflict	0.11497	0.31904	0	0	0	2,479					
Panel C: Mean by country income group	Gross debt	External debt	Domestic debt	SCredit rating	Armed conflict	Armed govt	Armed territory	Coup d'état	SDebt crisis	Currency crisis	Bank crisis
High income	.5677	.16	.4076	16.9906	.0369	.0143	.0226	.0075	.0015	.0023	.0211
Upper middle income	.4853	.2444	.2409	10.6707	.1791	.0663	.1128	.0249	.0149	.0299	.0232
Lower middle income	.5883	.3121	.2762	9.0137	.3392	.0947	.2445	.0617	.0066	.0396	.0176
Low income	.7073	.2523	.4551	7.3077	.4526	.4105	.0421	.1158	0	.0211	0

Armed conflict is a dummy variable equal to one if there is conflict in a country and zero otherwise. Armed government conflict is a dummy variable equal to one if the armed conflict related to the incompatibility concerning type of political system, the replacement of the central government, or the change of its composition. Armed territory conflict is a dummy variable equal to one, if the armed conflict related to the incompatibility concerning the status or control of a territory. Interstate conflict is a dummy variable equal to one in case the conflict is between countries. Intrastate conflict is a dummy variable equal to one if the conflict is between central government and rebel group. Coup d'état is a dummy variable equal to one if the country has a coup and zero otherwise. Sdebt crisis

stands for sovereign debt crisis which is a dummy variable equal to one if there is a sovereign debt crisis in a country and zero otherwise. Currency crisis is a dummy variable equal to one if there is a currency crisis in a country and zero otherwise. Bank crisis signifies systemic banking crisis, and it is a dummy variable equal to one if there is systemic banking crisis in country and zero otherwise. For high income countries, the external debt is the lowest and sovereign credit rating is the highest. High income countries also have the lowest sovereign debt crisis, and very few armed conflicts, but not the case for systemic bank crisis. However, armed conflict may not only the main factor of systemic banking crisis. According to (Klomp, 2010), the most critical determinants of the systemic banking crisis in high-income countries are high credit growth, negative GDP growth and a high real interest rate. Other three remaining groups present the lower level of credit rating, the higher level of armed conflict and currency crisis. This is consistent with (Balima, 2020; Hasanov & Bhattacharya, 2019).

Table 3: Armed conflict, government debt and corporate Leverage: The Financial Crowding-out effect

This table presents the results from regressing the gross government debt and armed conflict on corporate leverage indicators. Columns (1) and (2) present the results for gross government debt, while columns (3) and (4) present the results for armed conflict. Country, industry, and year fixed effects are included. The gross government debt to GDP is the sum of external and domestic government debt. Armed conflict is a dummy variable equal to there is conflict in a country and zero otherwise. All other variables are defined in the appendix. The p-values based on industry clustered robust standard errors are shown in parentheses. The coefficients patent with *, **, and *** are significant at 10%, 5%, and 1%, respectively.

VARIABLES	(1) Book_leverage	(2) Market_leverage	(3) Book_leverage	(4) Market_leverage
Gross debt	-0.0584*** (0.000)	-0.0328*** (0.000)	-0.0035** (0.028)	-0.0167*** (0.000)
Armed_conflict	-0.0146*** (0.000)	-0.0059*** (0.002)	-0.0318*** (0.000)	-0.0201*** (0.000)
LnGDP per capita	-0.0369*** (0.000)	-0.0500*** (0.000)	-0.0115*** (0.000)	-0.0107*** (0.000)
LnExchange_Rate	-0.0415*** (0.000)	-0.0356*** (0.000)	-0.0278*** (0.000)	-0.0139*** (0.000)
Tangibility	0.1852*** (0.000)	0.1404*** (0.000)	0.1709*** (0.000)	0.1410*** (0.000)
Lnassets	0.0168*** (0.000)	0.0104*** (0.000)	0.0172*** (0.000)	0.0123*** (0.000)
ROA	-0.0634*** (0.000)	-0.0827*** (0.000)	-0.0201*** (0.000)	-0.0507*** (0.000)
Market to book	-0.0024*** (0.000)	-0.0160*** (0.000)	-0.0034*** (0.000)	-0.0172*** (0.000)
Unemployment	0.0002 (0.548)	0.0005 (0.176)	-0.0002 (0.430)	0.0006*** (0.005)
Inflation	-0.0007*** (0.005)	0.0019*** (0.000)	-0.0003 (0.219)	0.0043*** (0.000)
Observations	668,556	668,556	668,556	668,556
R-squared	0.652	0.629	0.612	0.589
Industry FE	YES	YES	NO	NO
Country FE	YES	YES	NO	NO
Firm FE	NO	NO	YES	YES
Year FE	YES	YES	YES	YES

Table 4: Interaction of government debt with armed conflict: Wartime financing and corporate borrowing

In this table, we analyse whether the financial crowding out of gross government debt is perceived by armed conflict. We interact the variable gross government debt with a dummy variable armed conflict. Armed conflict is a dummy variable if there is conflict in a country and zero otherwise. Country, industry, and year fixed effects are included. All other variables are defined in Appendix. The p-values based on industry clustered robust standard errors are shown in parentheses and their results are presented in columns (1) and (2). While the p-values based on firms clustered robust standard errors are shown in parentheses and their results are presented in columns (3) and (4). Coefficients with *, **, and *** are significant at 10%, 5%, and 1%, respectively.

VARIABLES	(1) Book_leverage	(2) Market_leverage	(3) Book_leverage	(4) Market_leverage
Gross debt	-0.0609*** (0.000)	-0.0341*** (0.000)	-0.0016*** (0.004)	-0.0182*** (0.000)
Armed_conflict	-0.0380*** (0.000)	-0.0258*** (0.000)	-0.0242*** (0.000)	-0.0185*** (0.000)
Gross x Armed_conflict	0.0350*** (0.000)	0.0304*** (0.000)	0.0867*** (0.000)	0.0657*** (0.000)
LnGDP_per_capita	-0.0356*** (0.000)	-0.0488*** (0.000)	-0.0104*** (0.000)	-0.0092*** (0.000)
LnExchange_Rate	-0.0414*** (0.000)	-0.0354*** (0.000)	-0.0285*** (0.000)	-0.0162*** (0.000)
Tangibility	0.1855*** (0.000)	0.1406*** (0.000)	0.1729*** (0.000)	0.1434*** (0.000)
Lnassets	0.0166*** (0.000)	0.0103*** (0.000)	0.0174*** (0.000)	0.0126*** (0.000)
Market_book	-0.0024*** (0.000)	-0.0160*** (0.000)	-0.0034*** (0.000)	-0.0172*** (0.000)
ROA	-0.0629*** (0.000)	-0.0823*** (0.000)	-0.0196*** (0.000)	-0.0507*** (0.000)
Infla_gdp	-0.0005** (0.028)	0.0019*** (0.000)	-0.0006*** (0.000)	0.0038*** (0.000)
Observations	668,556	668,556	668,556	668,556
R-squared	0.652	0.629	0.613	0.591
Industry FE	YES	YES	NO	NO
Country FE	YES	YES	NO	NO
Firm FE	NO	NO	YES	YES
Year FE	YES	YES	YES	YES

Table 5: Interaction of the nature of armed conflict with gross government debt

In this table, we analyse whether the financial crowding out of gross government debt is perceived by the nature of armed conflict. We define the nature of armed conflict based on the incompatibility concerning government and incompatibility concerning territory. Incompatibility concerning government is explained as armed conflict based on replacing the central government or changing political system composition. While the incompatibility concerning territory is defined as the armed conflict based the status of a territory, e.g., autonomy or the change of the state in control of a certain territory. Furthermore, we create two dummy variables *armed_territory* and *armed_government* referring to the above definitions. We interact the variable gross government debt with dummy variables *armed_government* and *armed_territory*. All other variables are defined in Appendix. The p-values based on industry clustered robust standard errors are shown in parentheses. The results for *armed_government* are presented in columns (1) and (2), while the results for *armed_territory* are presented in columns (3) and (4). Coefficients with *, **, and *** are significant at 10%, 5%, and 1%, respectively.

VARIABLES	(1) Book_leverage	(2) Market_leverage	(3) Book_leverage	(4) Market_leverage
Gross debt	-0.0598*** (0.000)	-0.0307*** (0.000)	-0.0581*** (0.000)	-0.0308*** (0.000)
Armed_government	-0.0339*** (0.000)	-0.0049 (0.268)		
Gross x Armed government	0.0297*** (0.000)	0.0136** (0.042)		
Armed territory			-0.0379*** (0.000)	-0.0326*** (0.000)
Gross x Armed territory			0.0427*** (0.000)	0.0216** (0.025)
Inflation	-0.0007*** (0.002)	0.0017*** (0.000)	-0.0008*** (0.001)	0.0019*** (0.000)
Tangibility	0.1851*** (0.000)	0.1404*** (0.000)	0.1855*** (0.000)	0.1407*** (0.000)
Lnassets	0.0167*** (0.000)	0.0103*** (0.000)	0.0166*** (0.000)	0.0104*** (0.000)
Market to book	-0.0024*** (0.000)	-0.0160*** (0.000)	-0.0024*** (0.000)	-0.0160*** (0.000)
ROA	-0.0632*** (0.000)	-0.0824*** (0.000)	-0.0628*** (0.000)	-0.0824*** (0.000)
LnGDP_per_capita	-0.0364*** (0.000)	-0.0487*** (0.000)	-0.0361*** (0.000)	-0.0487*** (0.000)
LnExchange_rate	-0.0415*** (0.000)	-0.0357*** (0.000)	-0.0417*** (0.000)	-0.0355*** (0.000)
Observations	668,556	668,556	668,556	668,556
R-squared	0.652	0.629	0.652	0.630
Industry FE	YES	YES	YES	YES
Country FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES

Table 6: Interaction of types of armed conflict with external government debt

In this table, we analyse whether the financial effect of external government debt is perceived by the types of armed conflict. We classify the types of armed conflict into two categories. The interstate and intrastate conflict. We classify armed conflict as interstate if conflict is between countries. On the other side we classify armed conflict as intrastate, if side A is a country and side B is rebel group. We interact the variable external government debt with a dummy variable interstate and intrastate conflict. All other variables are defined in Appendix. The p-values based on industry clustered robust standard errors are shown in parentheses. The results for interstate are presented in columns (1) and (2), while the results for intrastate are presented in columns (3) and (4). Coefficients with *, **, and *** are significant at 10%, 5%, and 1%, respectively.

VARIABLES	(1) Book_leverage	(2) Market_leverage	(3) Book_leverage	(4) Market_leverage
External Debt	0.0702*** (0.000)	0.0671*** (0.000)	0.0792*** (0.000)	0.0792*** (0.000)
interstate	-0.0392*** (0.000)	-0.0906*** (0.000)		
External x interstate	0.1383** (0.029)	0.8588*** (0.000)		
External x itnl_intrastate			-0.3643*** (0.000)	-0.2740*** (0.000)
itnl_intrastate			0.0292*** (0.000)	0.0359*** (0.000)
Inflation	-0.0008*** (0.000)	0.0019*** (0.000)	-0.0006*** (0.007)	0.0018*** (0.000)
Tangibility	0.1851*** (0.000)	0.1405*** (0.000)	0.1853*** (0.000)	0.1409*** (0.000)
Lnassets	0.0166*** (0.000)	0.0104*** (0.000)	0.0166*** (0.000)	0.0102*** (0.000)
Market to book	-0.0024*** (0.000)	-0.0159*** (0.000)	-0.0024*** (0.000)	-0.0160*** (0.000)
ROA	-0.0647*** (0.000)	-0.0831*** (0.000)	-0.0649*** (0.000)	-0.0830*** (0.000)
LnGDP_per_capita	-0.0133*** (0.000)	-0.0340*** (0.000)	-0.0128*** (0.001)	-0.0339*** (0.000)
LnExchange_rate	-0.0391*** (0.000)	-0.0322*** (0.000)	-0.0385*** (0.000)	-0.0333*** (0.000)
Observations	668,556	668,556	668,556	668,556
R-squared	0.651	0.630	0.651	0.630
Industry FE	YES	YES	YES	YES
Country FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES

Table 7: Interaction of types of armed conflict with domestic government debt

In this table, we analyse whether the financial crowding-out effect of domestic government debt is perceived by the types of armed conflict. We classify the types of armed conflict into two categories. The interstate and intrastate conflict. We classify armed conflict as interstate if conflict is between countries. On the other side we classify armed conflict as intrastate if side A is a country and side B is rebel group. We interact the variable domestic government debt with a dummy variable interstate and intrastate conflict. All other variables are defined in Appendix. The p-values based on industry clustered robust standard errors are shown in parentheses. The results for interstate are presented in columns (1) and (2), while the results for intrastate are presented in columns (3) and (4). Coefficients with *, **, and *** are significant at 10%, 5%, and 1%, respectively.

VARIABLES	(1) Book_leverage	(2) Market_leverage	(3) Book_leverage	(4) Market_leverage
Domestic debt	-0.0575*** (0.000)	-0.0388*** (0.000)	-0.0647*** (0.000)	-0.0372*** (0.000)
Domestic x interstate	-0.0730*** (0.000)	-0.0065 (0.726)		
interstate	0.0209*** (0.001)	0.0309*** (0.001)		
Domestic x intrastate			0.0604*** (0.000)	0.0263*** (0.008)
intrastate			-0.0255*** (0.000)	-0.0222*** (0.000)
Inflation	-0.0012*** (0.000)	0.0017*** (0.000)	-0.0002 (0.594)	0.0014*** (0.000)
Tangibility	0.1856*** (0.000)	0.1410*** (0.000)	0.1866*** (0.000)	0.1760*** (0.000)
Lnassets	0.0166*** (0.000)	0.0104*** (0.000)	0.0182*** (0.000)	0.0157*** (0.000)
Market to book	-0.0024*** (0.000)	-0.0159*** (0.000)		
ROA	-0.0627*** (0.000)	-0.0821*** (0.000)	-0.0839*** (0.000)	-0.1059*** (0.000)
LnGDP per capita	-0.0327*** (0.000)	-0.0509*** (0.000)	-0.0332*** (0.000)	-0.0287*** (0.000)
LnExchange rate	-0.0408*** (0.000)	-0.0347*** (0.000)	-0.0450*** (0.000)	-0.0414*** (0.000)
Observations	668,556	668,556	505,240	505,240
R-squared	0.652	0.630	0.658	0.640
Industry FE	YES	YES	YES	YES
Country FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES

Table 8: Armed conflicts in one country can have negative spillover effects in nearest countries

In this table, we analyse whether armed conflicts in one country can have negative spillover effects in nearest or bordering countries. We interact the variable gross government debt with a dummy variable neighbor conflict. Neighbor conflict is a dummy variable which equals one if the country has no internal armed conflict and the country has at least one of its neighbors which has an armed conflict. Otherwise, our dummy variable neighbor conflict equals zero. All other variables are defined in Appendix. The p-values based on industry clustered robust standard errors are shown in parentheses. Coefficients with *, **, and *** are significant at 10%, 5%, and 1%, respectively.

VARIABLES	(1) Book_leverage	(2) Market_leverage	(3) Shortterm_leverage	(4) Longterm_leverage
Gross debt	-0.0612*** (0.000)	-0.0352*** (0.000)	-0.0458*** (0.000)	-0.0151*** (0.000)
Neighbor conflict	-0.0421*** (0.000)	-0.0281*** (0.000)	-0.0084*** (0.000)	-0.0331*** (0.000)
Gross x Neighbor conflict	0.0397*** (0.000)	0.0325*** (0.000)	0.0035 (0.342)	0.0355*** (0.000)
LnGDP per capita	-0.0352*** (0.000)	-0.0487*** (0.000)	-0.0111*** (0.000)	-0.0241*** (0.000)
LnExchange Rate	-0.0415*** (0.000)	-0.0356*** (0.000)	-0.0002 (0.812)	-0.0413*** (0.000)
Tangibility	0.1855*** (0.000)	0.1407*** (0.000)	0.0353*** (0.000)	0.1498*** (0.000)
Lnassets	0.0166*** (0.000)	0.0103*** (0.000)	-0.0001 (0.785)	0.0168*** (0.000)
ROA	-0.0629*** (0.000)	-0.0823*** (0.000)	-0.0427*** (0.000)	-0.0183*** (0.000)
Market to book	-0.0024*** (0.000)	-0.0160*** (0.000)	-0.0017*** (0.000)	-0.0008*** (0.007)
Unemployment	0.0000 (0.959)	0.0003 (0.382)	0.0014*** (0.000)	-0.0014*** (0.000)
Inflation	-0.0005** (0.038)	0.0020*** (0.000)	0.0003** (0.049)	-0.0008*** (0.000)
Observations	668,556	668,556	668,556	668,556
R-squared	0.652	0.629	0.501	0.555
Industry FE	YES	YES	YES	YES
Country FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES

Table 9: The armed conflict, crises, sovereign debt restructuring and credit rating

In this table, we investigate whether the governments that experienced armed conflict or crisis are likely to experience lower credit rating. The results for armed conflict are presented in column (1), the results for armed territory conflict are presented in column (2), the results for intrastate conflict are presented in column (3), the results for international intrastate conflict are presented in

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	SCredit_Rating	SCredit_Rating	SCredit_Rating	SCredit_Rating	SCredit_Rating	SCredit_Rating	SCredit_Rating
Armed_conflict	-0.0986*** (0.000)						
Armed_territory		-0.0946*** (0.000)					
intrastate			-0.0959*** (0.000)				
itnl_intrastate				-0.0594 (0.201)			
Sovereign debt restructuring					-0.2936*** (0.000)		
Crisis all						-0.0674*** (0.005)	
Sovereign debt crisis							-0.3362*** (0.000)
Observations	2,458	2,458	2,458	2,458	2,458	2,458	2,458
R-squared	0.993	0.993	0.993	0.993	0.993	0.993	0.993
Country FE	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES

column 4, the results for sovereign debt restructuring are presented in column 5, the results for all crises are presented in column 6, and the results for sovereign debt crisis are presented in column 7. We use country level panel data with country and year fixed effect. The p-values based on country clustered robust standard errors are shown in parentheses. All regressions include the same control variables as in the previous tables, which are not reported to save space. The control variables are the same as in the baseline Table. Coefficients with *, **, and *** are significant at 10%, 5%, and 1%, respectively. Sovereign debt crisis is a dummy variable equal to one if there is a sovereign debt crisis in a country and zero otherwise. The sovereign debt restructuring is a dummy variable equal to one if a country has debt restructuring and zero otherwise. Crisis all is a dummy variable equal to one if a country experiences sovereign debt crisis, systemic bank, or currency crisis. We collect data for crises from the dataset constructed by Babecký et al. (2014) and revised by Laeven and Valencia (2018)¹⁵. By evaluating the sequencing of crises, Laeven and Valencia (2018) supplement the data on currency and sovereign crisis dates. They also follow the same definitions as in (Laeven et al., 2013; Laeven & Valencia, 2008), which builds on the approach of (Frankel & Rose, 1996). They define a currency crisis as a sharp nominal currency depreciation vis-a-vis the U.S. dollar.

¹⁵ [Systemic Banking Crises Revisited \(imf.org\)](https://www.imf.org)

Table 10: Sovereign debt restructuring effect

VARIABLES	(1) Book_leverage	(2) Market_leverage	(3) Shortterm_leverage	(4) Longterm_leverage
Gross debt	-0.0563*** (0.000)	-0.0309*** (0.000)	-0.0410*** (0.000)	-0.0153*** (0.000)
Sovereign debt restructuring	-0.0836*** (0.000)	-0.0792*** (0.000)	-0.0450*** (0.000)	-0.0357*** (0.004)
Gross x sovereign debt restructuring	0.0768*** (0.000)	0.0901*** (0.000)	0.0536*** (0.000)	0.0189 (0.100)
LnGDP per capita	-0.0364*** (0.000)	-0.0496*** (0.000)	-0.0106*** (0.000)	-0.0257*** (0.000)
LnExchange rate	-0.0419*** (0.000)	-0.0356*** (0.000)	0.0002 (0.788)	-0.0421*** (0.000)
Inflation	-0.0009*** (0.000)	0.0018*** (0.000)	0.0000 (0.874)	-0.0009*** (0.000)
Tangibility	0.1851*** (0.000)	0.1404*** (0.000)	0.0353*** (0.000)	0.1494*** (0.000)
Lnassets	0.0166*** (0.000)	0.0104*** (0.000)	-0.0001 (0.717)	0.0168*** (0.000)
Market to book	-0.0024*** (0.000)	-0.0160*** (0.000)	-0.0017*** (0.000)	-0.0007*** (0.009)
ROA	-0.0631*** (0.000)	-0.0826*** (0.000)	-0.0426*** (0.000)	-0.0186*** (0.000)
Observations	668,556	668,556	668,556	668,556
R-squared	0.652	0.629	0.500	0.555
Industry FE	YES	YES	YES	YES
Country FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES

In this table, we investigate whether the sovereign debt restructuring influence the corporate debt financing effect of government debt. We interact gross government debt and sovereign debt restructuring. We use firm level panel data with industry, country, and year fixed effect. The p-values based on industry clustered robust standard errors are shown in parentheses. Coefficients with *, **, and *** are significant at 10%, 5%, and 1%, respectively. The sovereign debt restructuring is a dummy variable equal to one if a country has debt restructuring and zero otherwise. All other variables are defined in Appendix.

Table 11: Instrumental Variable Regressions: Two Stages Least Squares

VARIABLES	(1) First Stage Armed_conflict	(2) FirstStage Armed_conflict	(3) Second Stage Book_leverage	(4) Second Stage Market_leverage	(5) Second Stage Book_leverage	(6) Second Stage Market_leverage
Lnrefugees	0.0691*** (0.000)					
Opposition seats proposition		-0.0099*** (0.004)				
Armed conflict			-0.0186*** (0.000)	-0.0058*** (0.000)	-0.0220*** (0.000)	-0.0085*** (0.000)
Inflation	0.0169*** (0.000)	0.0171*** (0.000)	-0.0015*** (0.000)	0.0013*** (0.000)	-0.0019*** (0.000)	0.0001 (0.296)
Tangibility	-0.0028** (0.035)	-0.0013 (0.349)	0.1885*** (0.000)	0.1469*** (0.000)	0.1885*** (0.000)	0.1467*** (0.000)
Lnassets	0.0095*** (0.000)	0.0108*** (0.000)	0.0191*** (0.000)	0.0124*** (0.000)	0.0191*** (0.000)	0.0124*** (0.000)
Market to book	0.0001 (0.361)	-0.0000 (0.902)	-0.0033*** (0.000)	-0.0168*** (0.000)	-0.0033*** (0.000)	-0.0170*** (0.000)
ROA	-0.0235*** (0.000)	-0.0262*** (0.000)	-0.0295*** (0.000)	-0.0602*** (0.000)	-0.0254*** (0.000)	-0.0537*** (0.000)
LnGDP per capita	0.0508*** (0.000)	0.0012 (0.311)	-0.0775*** (0.000)	-0.0598*** (0.000)	-0.1059*** (0.000)	-0.0854*** (0.000)
LnExchange rate	0.0178*** (0.000)	0.0329*** (0.000)	-0.0471*** (0.000)	-0.0374*** (0.000)	-0.0489*** (0.000)	-0.0325*** (0.000)
Observations	668,556	668,556	668,556	668,556	668,556	668,556
R-squared	0.775	0.763	0.623	0.609	0.613	0.597
Cragg-Donald F statistic	44.588	33.699				
Country FE	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES
Adj R2	0.775	0.763	0.623	0.609	0.613	0.596

This table presents the instrumental variable (IV) regression results from regressing the corporate leverage indicators on gross government debt and armed conflict. Our instruments for armed conflict are Lnrefugees and opposition seats%. Lnrefugees is the natural log of the number of refugees fleeing the country due to armed conflict. We define refugees based on the 1951 convention on the status of refugees or the Geneva convention of 28 July 1951. Therefore, we only use the number of refugees granted refugee status based on the armed conflict in their home countries¹⁶¹⁷. We also use opposition seats%, the proportion of seats held by the largest opposition party in the given country and year. Country and year fixed effects are included. The results in columns (1) and (2) are for first stage, while the results in columns (3) and (4) are for second stage using Lnrefugees as an instrument, and results in columns (5) and (6) are for second stage using opposition seats as an instrument. All other variables are defined in Appendix. The coefficients marked with *, **, and *** are significant at 10%, 5%, and 1%, respectively.

¹⁶ Convention relating to the Status of Refugees | OHCHR

¹⁷ https://www.un.org/en/genocideprevention/documents/atrocity-crimes/Doc.23_convention%20refugees.pdf

Table 12: Difference in Difference Estimator

VARIABLES	(1) Book_leverage	(2) Shortterm_leverage	(3) Longterm_leverage	(4) SCredit_Rating
Crimea_Year	-0.0519*** (0.000)	-0.0684*** (0.000)	0.0166*** (0.002)	-0.0715 (0.575)
Invade2014	-0.1961*** (0.000)	-0.1501*** (0.000)	-0.0464* (0.058)	0.7595 (0.158)
Crimea_YearxInvade2014	-0.0396*** (0.000)	-0.0078*** (0.000)	-0.0324*** (0.000)	-0.0926** (0.038)
Observations	668,556	668,556	668,556	2,458
R-squared	0.652	0.501	0.556	0.993
Control variables	YES	YES	YES	YES
Industry FE	YES	YES	YES	NO
Country FE	YES	YES	YES	YES

This table presents the Difference in Difference estimator regression. Invade2014 is a dummy variable equal to one if the country did not vote YES during 27th March 2014 United Nations (UN) general assembly of voting territorial integrity of Ukraine and zero otherwise. Crimea_Year is a dummy variable equals to one if the year is greater than 2014 and zero otherwise. Industry, country and year fixed effects are included. All other variables are defined in Appendix. The coefficients marked with *, **, and *** are significant at 10%, 5%, and 1%, respectively. All regressions include the same control variables as in the previous tables, which are not reported to save space. The control variables are ROA, tangibility, market to book, LnGDP per capita, Lnexchange rate, unemployment, and inflation.

Table 13: Propensity Score Matching estimator

Nearest Neighborhood Matching Method						
Sovereign Credit rating	Coef.	Std. Err.	z	P>z	[95% Conf. Interval]	
SATT	-.0811619	.0253011	-3.21	0.001	-.1307511	-.0315727
Abadie-Imbens Matching Method						
Sovereign Credit rating	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
SATT	-.1645252	.0472805	-3.48	0.001	-.2571932	-.0718571

In this table we present result for propensity score matching estimator. SATT stands for Sample Average Treatment Effect of the Treated. In finance, we often study whether various corporate events cause any real outcomes. Because causation is difficult to establish, looking at treatment effects has become one of the principal empirical methodologies. Most corporate events do not constitute random assignments, so we must deal with this lack of randomness. Propensity score matching estimators are commonly used to estimate average treatment effects (Abadie & Imbens, 2016; Rosenbaum & Rubin, 1983). We test whether armed conflict decreases the country's sovereign credit rating using score matching estimator. Abadie and Imbens' method is a bias-corrected matching technique. This method also minimizes the Mahalanobis distance of a vector of observed covariates between treated and control groups, and it adjusts the outcome variable (in our case, sovereign credit rating) for any bias that occurs due to a large matching distance between the treated and control countries. We find the negative coefficient on our dummy armed conflict, i.e., the average treatment effect is negative. The coefficients for both the nearest neighbourhood and Abadie-Imbens matching method are negative.

Appendix:

Firm Variables	Data Source	Definition
Lnassets	Compustat, Annual financial reports of the companies	Natural log of total book assets
ROA	Compustat, Annual financial reports of the companies	Operating income (Before depreciation) / Assets
Tangibility	Compustat, Annual financial reports of the companies	Net PPE / Assets
Market value of equity	Compustat, Annual financial reports of the companies	share price*common shares outstanding
Market value of assets	Compustat, Annual financial reports of the companies	MVA = Total assets - common equity + Market value of equity
Market-to-book	Compustat, Annual financial reports of the companies	Market value of assets/ Total book assets
Total capital	Compustat, Annual financial reports of the companies	Total debt + common equity
Total debt	Compustat, Annual financial reports of the companies	Short-term debt + Long-term debt
Book leverage	Compustat, Annual financial reports of the companies	Total debt / Total book assets
Market leverage	Compustat, Annual financial reports of the companies	Total debt / Market Value of Assets
Macro variables	Data Source	Definition
Government debt-to-GDP	IMF (WEO), Central Banks, World Bank	General government debt (% GDP)
GDP per capita	World Bank	GDP per capita (current US\$)
Inflation	World Bank, and IMF	Inflation, consumer prices (annual %): Inflation as measured by the consumer price index reflects the annual percentage change in the cost to the average consumer of acquiring a basket of goods and services that may be fixed or changed at specified intervals, such as yearly. The Laspeyres formula is generally used.
Nominal exchange rate	World Bank	Official exchange rate (LCU per US\$)
External government debt	World Bank and IMF	Public and publicly guaranteed external debt (% GDP)
Domestic gov.debt	World Bank and IMF	Difference between general and external government debt
Unemployment	World Bank	Unemployment refers to the share of the labor force that is without work but available for and seeking employment.
Armed conflict	Uppsala Conflict Data Program (UCDP)	UCDP defines state-based armed conflict as: "a contested incompatibility that concerns government and/or territory where the use of armed force between two parties, of which at least one is the government of a state, results in at least 25 battle-related deaths in a calendar year."
opposition seats	Database of Political Institutions 2020 (DPI2020)	Opposition seats is the proportion of the opposition seats
Crisis	IMF Systemic Banking Crises Revisited (imf.org)	See Babecký et al. (2014) and Laeven and Valencia (2018)

**Online Appendix
to
Wartime Financing and Corporate Leverage**

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Table 14: Armed conflict, government debt and Leverages: Country Level Analysis using the first lag

This table presents the results from regressing the lag of gross government debt and lag of armed conflict on corporate leverage indicators using aggregated data i.e on country level analysis. Columns (1) - (4) present the results for gross government debt, while columns (5) - (8) present the results for armed conflict. Country and year fixed effects are included. The gross government debt to GDP is the sum of external and domestic government debt. Armed conflict is a dummy variable equal to there is conflict in a country and zero otherwise. All other variables are defined in the appendix. The coefficients patent with *, **, and *** are significant at 10%, 5%, and 1%, respectively.

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Book_leverage	Market_leverage	Longterm_leverage	Shortterm_leverage	Book_leverage	Market_leverage	Longterm_leverage	Shortterm_leverage
Gross debt_1	-0.0251*** (0.000)	-0.2236 (0.503)	-0.0102* (0.070)	-0.0149*** (0.000)				
Armed conflict_1					-0.0203*** (0.006)	-0.0194 (0.958)	-0.0155** (0.015)	-0.0048 (0.223)
Inflation_1	0.0009* (0.086)	-0.0126 (0.636)	0.0001 (0.859)	0.0008*** (0.003)	0.0008 (0.122)	-0.0107 (0.687)	0.0001 (0.863)	0.0007*** (0.008)
LnExchange rate_1	-0.0117*** (0.000)	0.0411 (0.665)	-0.0123*** (0.000)	0.0006 (0.579)	-0.0110*** (0.000)	0.0343 (0.716)	-0.0120*** (0.000)	0.0010 (0.310)
Unemployment_1	0.0000 (0.999)	0.0000 (1.000)	-0.0001 (0.909)	0.0001 (0.850)	-0.0006 (0.345)	0.0070 (0.822)	-0.0002 (0.651)	-0.0003 (0.295)
Tangibility_1	0.1714*** (0.000)	0.8365 (0.242)	0.1682*** (0.000)	0.0032 (0.672)	0.1736*** (0.000)	0.8076 (0.258)	0.1686*** (0.000)	0.0049 (0.513)
Lnassets_1	0.0023*** (0.000)	-0.0222 (0.476)	0.0022*** (0.000)	0.0001 (0.712)	0.0023*** (0.000)	-0.0217 (0.486)	0.0022*** (0.000)	0.0001 (0.758)
ROA_1	-0.2050*** (0.000)	-0.5303 (0.720)	-0.1441*** (0.000)	-0.0609*** (0.000)	-0.2064*** (0.000)	-0.4785 (0.747)	-0.1436*** (0.000)	-0.0628*** (0.000)
Market to book_1	-0.0003** (0.030)	-0.0043 (0.487)	-0.0004*** (0.000)	0.0001* (0.065)	-0.0003** (0.041)	-0.0044 (0.474)	-0.0004*** (0.000)	0.0001** (0.049)
LnGDP per capita_1	0.0184*** (0.000)	0.1145 (0.566)	0.0121*** (0.000)	0.0063*** (0.003)	0.0192*** (0.000)	0.1078 (0.589)	0.0125*** (0.000)	0.0068*** (0.001)
Observations	2,331	2,322	2,331	2,331	2,331	2,322	2,331	2,331
R-squared	0.947	0.079	0.921	0.881	0.947	0.079	0.921	0.880
Country FE	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES

Table 15: Systemic banking crisis and corporate debt financing effect of government debt

In this table, we investigate whether the systemic banking crisis influences corporate debt financing effect of government debt. We interact gross government debt and systemic banking crisis. We use firm level panel data with industry, country, and year fixed effect. The p-values based on industry clustered robust standard errors are shown in parentheses. Coefficients with *, **, and *** are significant at 10%, 5%, and 1%, respectively. The systemic banking crisis is a dummy variable equal to one if a country faced systemic banking crisis and zero otherwise. All other variables are defined in Appendix. All regressions include the same control variables as in the previous tables, which are not reported to save space. The control variables are ROA, tangibility, market to book, LnGDP per capita, Lnextchange rate, unemployment, and inflation.

VARIABLES	(1) Book_leverage	(2) Market_leverage	(3) Book_leverage	(4) Market_leverage	(5) Book_leverage	(6) Market_leverage
Gross debt	-0.0563*** (0.000)	-0.0296*** (0.000)				
Systemic Banking Crisis	0.0177*** (0.000)	0.0657*** (0.000)	0.0126*** (0.000)	0.0510*** (0.000)	0.0148*** (0.000)	0.0473*** (0.000)
GrossxSBcrisis	-0.0274*** (0.000)	-0.0677*** (0.000)				
External Debt			0.0706*** (0.000)	0.0766*** (0.000)		
ExternalxSBcrisis			-0.0378* (0.100)	-0.1283*** (0.000)		
Domestic debt					-0.0581*** (0.000)	-0.0370*** (0.000)
DomesticxSBcrisis					-0.0311*** (0.001)	-0.0456*** (0.000)
Observations	668,556	668,556	668,556	668,556	668,556	668,556
R-squared	0.652	0.630	0.651	0.630	0.652	0.630
Industry FE	YES	YES	YES	YES	YES	YES
Country FE	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES

The systemic banking crisis reflects the nationwide banking crisis, which spread its consequences to the whole banking sector. Domestic banks experience several defaults by borrowers, leading to a sharp increase in the non-performing loans of the banking sector. When the crisis is systemic, the total losses of banks are beyond the capital of the banking system (Hasanov & Bhattacharya, 2019; Laeven & Valencia, 2018). Table 12 reveals a significant negative coefficient on the interaction of government debts and systemic banking crisis. According to (Reinhart & Rogoff, 2011), a bank crisis may lead to a sovereign debt crisis and tend to have pervasive adverse effects on the local debt market. As the banking crisis caused by armed conflict may generate risk spill over effects (Alter & Beyer, 2014; Poirson & Schmittmann, 2013) it is hence an accepted practice for central banks to inject liquidity into the financial system to avoid excessive credit contractions in the aftermath of a crisis (García-Palacios et al., 2014; Hasman et al., 2011). Monetary authorities may opt to ease monetary policy and infuse liquidity into the banking system after the subprime lending crisis and its possible contagion effects in several economies of countries. The availability of the fiscal and monetary space or the ability to finance more significant deficits allows high-income economies to countercyclically act to mitigate the impact of the crisis on the real economy (Laeven & Valencia, 2018). In contrast, low and middle-income countries could have faced binding borrowing constraints that forced them to act procyclically during crises. The political channel shows that if governments are concerned about domestic approval rates, there is a higher chance of a credit boom increasing the prospect of a banking crisis. However, the presence of an independent and well-functioning central bank mitigates the crisis probability and reduces the opportunistic behaviour of governments (Hasanov & Bhattacharya, 2019).

Table 16: Currency crisis and financial effect of government debt

In this table, we investigate whether the systemic banking crisis influences corporate debt financing effect of government debt. We interact gross government debt and systemic banking crisis. We use firm level panel data with industry, country, and year fixed effect. The p-values based on industry clustered robust standard errors are shown in parentheses. Coefficients with *, **, and *** are significant at 10%, 5%, and 1%, respectively. The systemic banking crisis is a dummy variable equal to one if a country faced systemic banking crisis and zero otherwise. All other variables are defined in Appendix. All regressions include the same control variables as in the previous tables, which are not reported to save space. The control variables are ROA, tangibility, market to book, LnGDP per capita, Lexchange rate, unemployment, and inflation.

VARIABLES	(1) Book_leve rage	(2) Market_leve rage	(3) Shortterm_leve rage	(4) Market_leve rage	(5) Book_leve rage	(6) Market_leve rage	(7) Shortterm_leve rage	(8) Longterm_leve rage
External Debt	0.0725*** (0.000)	0.0777*** (0.000)	0.0139*** (0.000)	0.0777*** (0.000)				
Currency Crisis	0.0691*** (0.000)	0.0509*** (0.000)	0.0423*** (0.000)	0.0509*** (0.000)	-0.0034 (0.613)	-0.0109 (0.101)	0.0110** (0.012)	-0.0150*** (0.001)
ExternalxCcrisis	- 0.2416*** (0.000)	-0.1917*** (0.000)	-0.0787*** (0.000)	-0.1917*** (0.000)				
Domestic debt					- 0.0586*** (0.000)	-0.0383*** (0.000)	-0.0363*** (0.000)	-0.0221*** (0.000)
DomesticxCcrisis					0.0704*** (0.000)	0.0696*** (0.000)	0.0495*** (0.000)	0.0135 (0.256)
Observations	668,556	668,556	668,556	668,556	668,556	668,556	668,556	668,556
R-squared	0.651	0.629	0.499	0.629	0.652	0.630	0.500	0.555
Industry FE	YES	YES	YES	YES	YES	YES	YES	YES
Country FE	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES

Table 16 displays a significant negative coefficient on the interaction between the external debt and currency crisis. In contrast, a significant positive coefficient on the interaction of domestic debt and currency crisis is found. Our findings corroborate those of (Jin et al., 2021) where the local corporates without foreign currency debt are less affected by the currency crisis. During currency crises, balance sheet losses from currency depreciations propagate the crises into the real sector of the economy. Firms with large currency mismatches just before the Crisis reduced their investment rates more than other publicly held firms. The currency depreciation increased the revenue of the exporters, but those with currency mismatches reduced the investments more than other exporters (Janot et al., 2021). According to (Kalash, 2021), currency crisis exacerbates the negative association between financial leverage and performance. However, sovereign debt and currencies play an increasingly influential role in the development of any economy, given the need to obtain financing (Alaminos et al., 2021). Higher international reserves, higher exports, and higher degree of financial openness alleviate the effect of currency crises on the private sector (Sever, 2021).

Table 17: Sovereign debt crisis financing effect

In this table, we analyze the sovereign debt crisis and corporate financing effect of government debt. We interact gross government debt and sovereign debt crisis. We use firm level panel data with industry, country, and year fixed effect. The p-values based on industry clustered robust standard errors are shown in parentheses. Coefficients with *, **, and *** are significant at 10%, 5%, and 1%, respectively. The sovereign debt crisis is a dummy variable equal to one if a country faced debt crisis and zero otherwise. All other variables are defined in Appendix. All regressions include the same control variables as in the previous tables, which are not reported to save space. The control variables are ROA, tangibility, market to book, LnGDP per capita, Lnexchange rate, unemployment, and inflation.

VARIABLES	(1) Book_leverage	(2) Market_leverage	(3) Shortterm_leverage	(4) Longterm_leverage	(5) Book_leverage	(6) Market_leverage	(7) Shortterm_leverage	(8) Longterm_leverage
External Debt	0.0703*** (0.000)	0.0775*** (0.000)	0.0134*** (0.000)	0.0565*** (0.000)				
Sovereign Debt Crisis	0.0304*** (0.003)	0.0878*** (0.000)	0.0291*** (0.002)	0.0023 (0.833)	0.0329** (0.010)	-0.0336*** (0.007)	0.0200** (0.017)	0.0076 (0.443)
ExternalxSDcrisis	-0.0225 (0.373)	-0.2053*** (0.000)	-0.0079 (0.723)	-0.0279 (0.250)				
Domestic debt					-0.0583*** (0.000)	-0.0381*** (0.000)	-0.0361*** (0.000)	-0.0221*** (0.000)
DomesticxSDcrisis					0.0027 (0.819)	0.0697*** (0.000)	0.0182* (0.079)	-0.0147 (0.169)
Observations	668,556	668,556	668,556	668,556	668,556	668,556	668,556	668,556
R-squared	0.651	0.629	0.498	0.555	0.652	0.630	0.500	0.555
Industry FE	YES	YES	YES	YES	YES	YES	YES	YES
Country FE	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES

Table 17 shows a negative coefficient on the interaction between external debt and sovereign debt crisis. In contrast, a positive coefficient on the interaction between domestic debt and sovereign debt is found. It is only statistically significant on market leverage. If the sovereign risk is high, the low-capital banks lend less to the local firms to increase their holdings of domestic public bonds (Crosignani, 2021). In this case, guarantees are the key channel linking banks and sovereign or financial market stability, even without sovereign bonds holdings of the banks. Contextually, guarantees can be beneficial for financial stability without undermining sovereign solvency, depending on the specific characteristics of the economy and the nature of sovereign debt crises, (Leonello, 2018). According to (Ferreira & Saridakis, 2017), smaller firms are more likely to shut down than larger firms in times of sovereign debt crisis. In contrast, medium-sized firms are more vulnerable during the financial crisis but more flexible in times of the sovereign debt crisis. During the sovereign debt crisis, firms have a higher probability of closing than they may have in times of financial crisis. Acharya et al. (2018) indicate that value impairment in exposures of banks to the sovereign debt crisis and the risk-shifting behaviour of weakly capitalized banks reduced the probability of firms being granted new syndicated loans by up to 53%. This lending contraction depressed investment, employment, and sales growth of firms affiliated with affected banks. The sovereign debt crisis deteriorates some domestic macroeconomic variables reasonably. Specifically, lower real GDP growth and a decrease in national savings can reduce the country debt market's ability to meet its financial obligations.

Table 18: Armed conflict, government debt and corporate Leverage (We dropped countries with less than five firms)

This table presents the results from regressing the gross government debt and armed conflict on corporate leverage indicators. Columns (1) and (2) present the results for gross government debt, while columns (3) and (4) present the results for armed conflict. Country, industry, and year fixed effects are included. The gross government debt to GDP is the sum of external and domestic government debt. Armed conflict is a dummy variable equal to there is conflict in a country and zero otherwise. All other variables are defined in the appendix. The p-values based on industry clustered robust standard errors are shown in parentheses. The coefficients patent with *, **, and *** are significant at 10%, 5%, and 1%, respectively.

VARIABLES	(1) Book_leverage	(2) Market_leverage	(3) Book_leverage	(4) Market_leverage
Gross debt	-0.0489*** (0.000)	-0.0132*** (0.001)		
Armed_conflict			-0.0103*** (0.000)	-0.0056*** (0.003)
LnExchange_Rate	-0.0414*** (0.000)	-0.0348*** (0.000)	-0.0395*** (0.000)	-0.0343*** (0.000)
Tangibility	0.1859*** (0.000)	0.1425*** (0.000)	0.1849*** (0.000)	0.1422*** (0.000)
Lnassets	0.0168*** (0.000)	0.0109*** (0.000)	0.0168*** (0.000)	0.0109*** (0.000)
ROA	-0.0636*** (0.000)	-0.0840*** (0.000)	-0.0653*** (0.000)	-0.0846*** (0.000)
Market_book	-0.0024*** (0.000)	-0.0160*** (0.000)	-0.0024*** (0.000)	-0.0160*** (0.000)
Unemployment	-0.0004 (0.244)	0.0002 (0.666)	-0.0021*** (0.000)	-0.0002 (0.534)
Infla_gdp	-0.0007*** (0.004)	0.0026*** (0.000)	-0.0007*** (0.004)	0.0026*** (0.000)
LnGDP_per_capita	-0.0256*** (0.000)	-0.0196*** (0.000)	-0.0189*** (0.000)	-0.0179*** (0.000)
Observations	668,243	668,243	668,243	668,243
R-squared	0.652	0.628	0.651	0.628
Industry FE	YES	YES	YES	YES
Country FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES

Table 19: The effect of armed conflict on corporate debt borrowing depends on the size of the firms

VARIABLES	(1) Debt servicing Cost	(2) Long term Leverage	(3) Short term Leverage	(4) Book Leverage	(5) Market Leverage
Large_Firms	-1.0341* (0.051)	-0.0328*** (0.000)	-0.0040 (0.114)	-0.0378*** (0.000)	-0.0159*** (0.000)
Armed_conflict	-1.9499** (0.024)	-0.0018 (0.444)	0.0071*** (0.000)	0.0052* (0.066)	-0.0041 (0.111)
Armed_conflictXLarge_Firms	-0.2296 (0.484)	-0.0271*** (0.000)	-0.0014 (0.739)	-0.0279*** (0.001)	-0.0343*** (0.000)
Armed_conflictXSmall_Firms	3.4493** (0.017)	-0.0153*** (0.000)	-0.0223*** (0.000)	-0.0375*** (0.000)	0.0029 (0.412)
LnGDP_per_capita	-0.1749 (0.699)	-0.0213*** (0.000)	0.0022 (0.347)	-0.0192*** (0.000)	-0.0405*** (0.000)
LnExchange_Rate	-0.3172** (0.015)	-0.0419*** (0.000)	0.0024*** (0.005)	-0.0394*** (0.000)	-0.0360*** (0.000)
Tangibility	-3.8160* (0.099)	0.1475*** (0.000)	0.0345*** (0.000)	0.1823*** (0.000)	0.1391*** (0.000)
Lnassets	0.3142* (0.065)	0.0178*** (0.000)	-0.0008*** (0.010)	0.0171*** (0.000)	0.0114*** (0.000)
Market_book	-0.0354 (0.233)	-0.0008*** (0.004)	-0.0017*** (0.000)	-0.0025*** (0.000)	-0.0160*** (0.000)
ROA	-2.6152*** (0.001)	-0.0246*** (0.000)	-0.0465*** (0.000)	-0.0730*** (0.000)	-0.0860*** (0.000)
Infla_gdp	0.1678 (0.252)	-0.0007*** (0.000)	0.0002* (0.095)	-0.0004* (0.090)	0.0020*** (0.000)
Observations	590,227	668,556	668,556	668,556	668,556
R-squared	0.001	0.557	0.500	0.653	0.629
Industry FE	YES	YES	YES	YES	YES
Country FE	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES

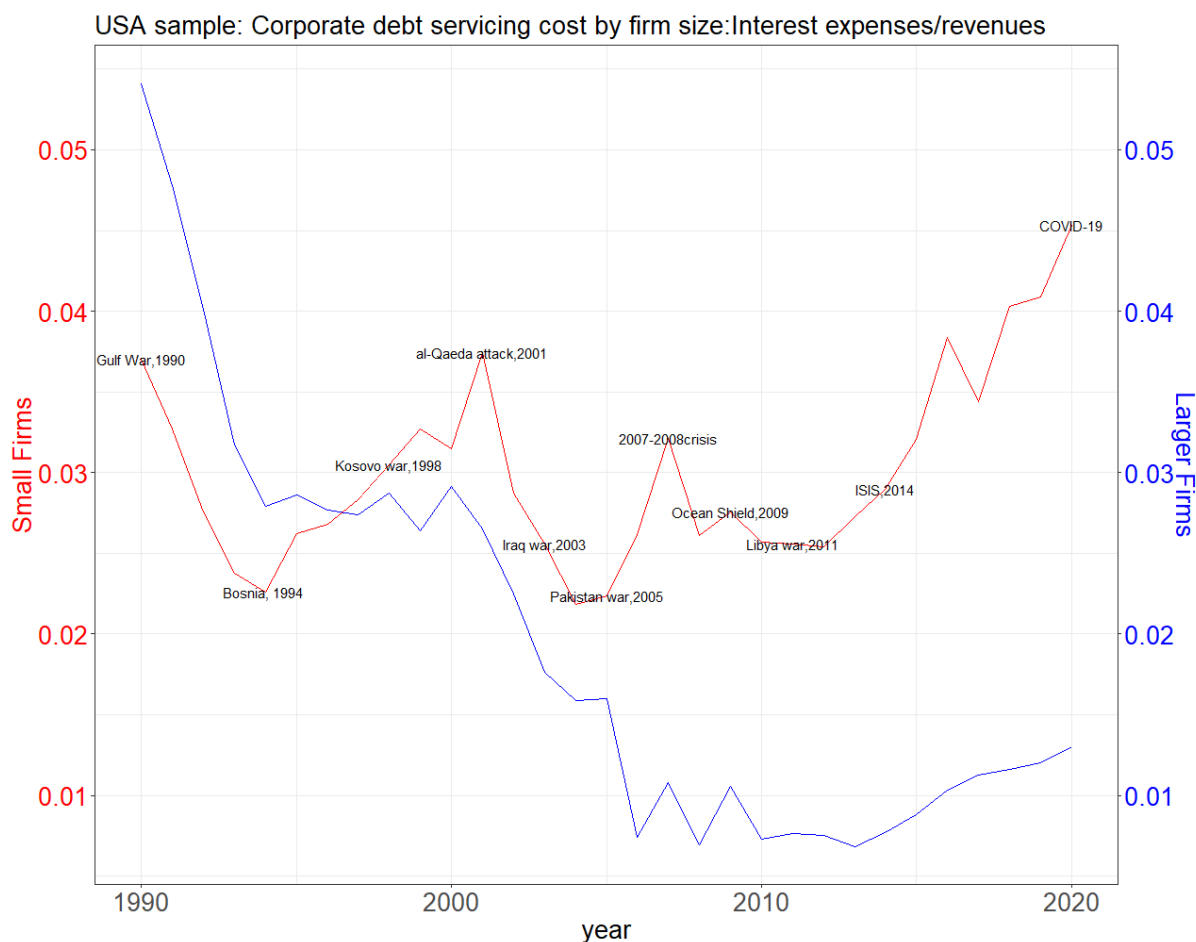
In this table, we analyse whether the effect of armed conflict on corporate borrowing depends on the firm's size. Larger firms are in the 10th decile, while smaller firms are located in the bottom 50 per cent. Debt servicing cost is the ratio of interest expenses and revenues. We interact the dummy variable armed conflict with firms' size. Armed conflict increases the cost of debt only for small firms. The large-scale intervention of the government to save the financial system from collapse is heavily biased toward the largest firms¹⁸¹⁹(Baines & Hager, 2021). The p-values based on industry-clustered robust standard errors are shown in parentheses. Coefficients with *, **, and *** are significant at 10%, 5%, and 1%, respectively.

¹⁸ [The Fed Can Do More For Small Businesses. But It Needs Help \(forbes.com\)](https://www.forbes.com)

¹⁹ [The Fed Bailed Out the Investor Class Without Spending a Cent \(theintercept.com\)](https://theintercept.com)

USA DATA

In this section, we describe wartime financing using US data. Then, we present our results using graphs referring to the different armed conflicts involved by the US. For instance, in the **Gulf war** of 1990-1991, the US fought Iraq when they illegally invaded Kuwait. US troops were dispatched to expel Saddam Hussein's troops from Kuwait. Oil was the driving force behind the invasion and would lead to US military involvement²⁰. US spending on the Gulf War (2019 dollars): \$116.6 billion²¹. After the terrorist attacks of 2001 by al-Qaeda, the United States invaded **Afghanistan** to drive the ruling Taliban, who provided al-Qaeda, the terrorist group responsible for the September 11 terrorist attack. US war spending on Afghanistan (2019 dollars) is \$910.47 billion²². The conflict in **Iraq** cost the United States about \$1 trillion. Believing it possessed weapons of mass destruction, US troops invaded Iraq in 2003 and overthrew Saddam Hussein²³.



This figure compares the cost of debt for small and large firms. We have small firms in red and large firms in the blue line plot. The figure shows that the cost of debt is higher for small firms. We define debt servicing cost as the ratio of interest expenses and revenues. Larger firms are the firms located in the 10th decile, while smaller firms are the firms located in the bottom 50 per cent. In the figure, we indicate the major wars in which the USA was involved.

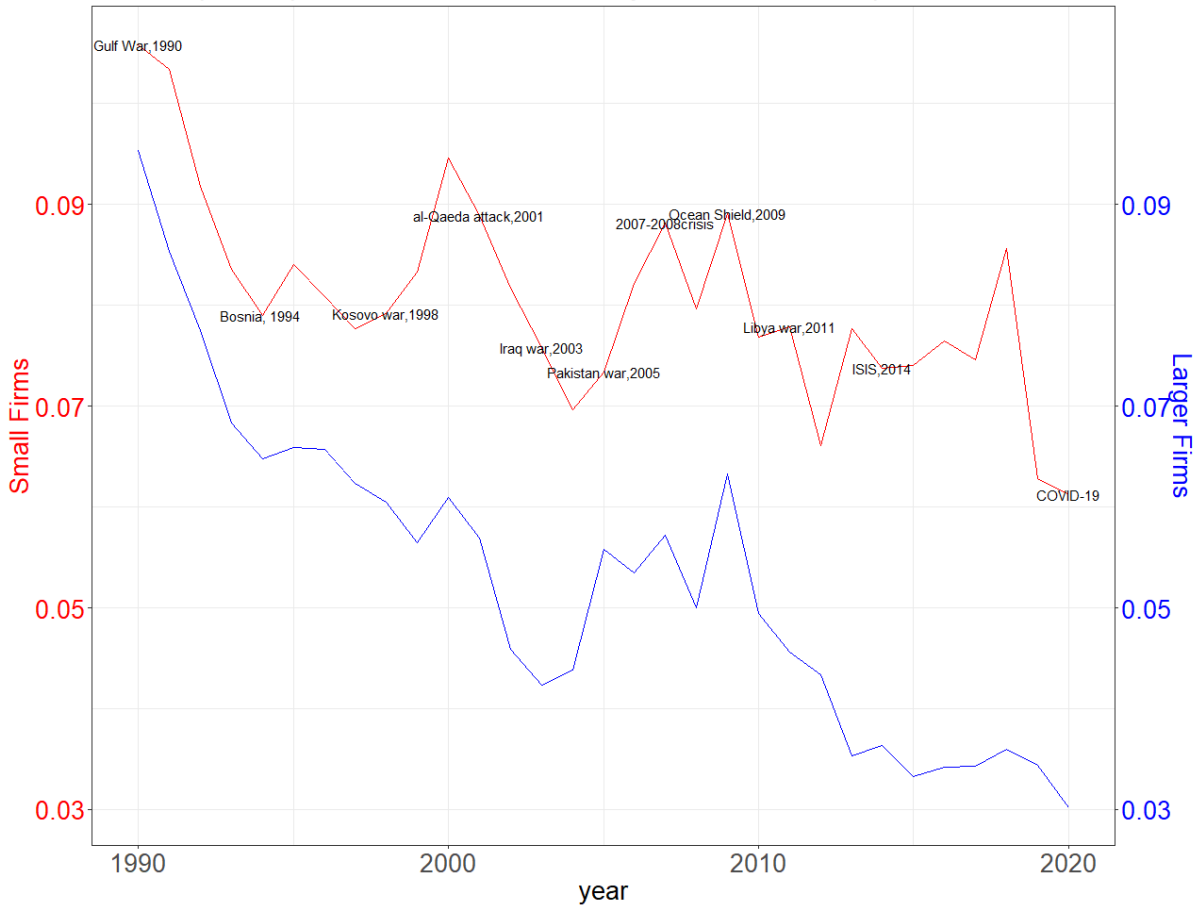
²⁰ [Persian Gulf War | Summary, Dates, Combatants, Casualties, Syndrome, Map, & Facts | Britannica](#)

²¹ [Cost of war: The 13 most expensive campaigns in U.S. history \(usatoday.com\)](#)

²² [Cost of war: The 13 most expensive campaigns in U.S. history \(usatoday.com\)](#)

²³ [Cost of war: The 13 most expensive campaigns in U.S. history \(usatoday.com\)](#)

USA sample: Corporate effective interest rate by firm size: Interest expenses/Debt

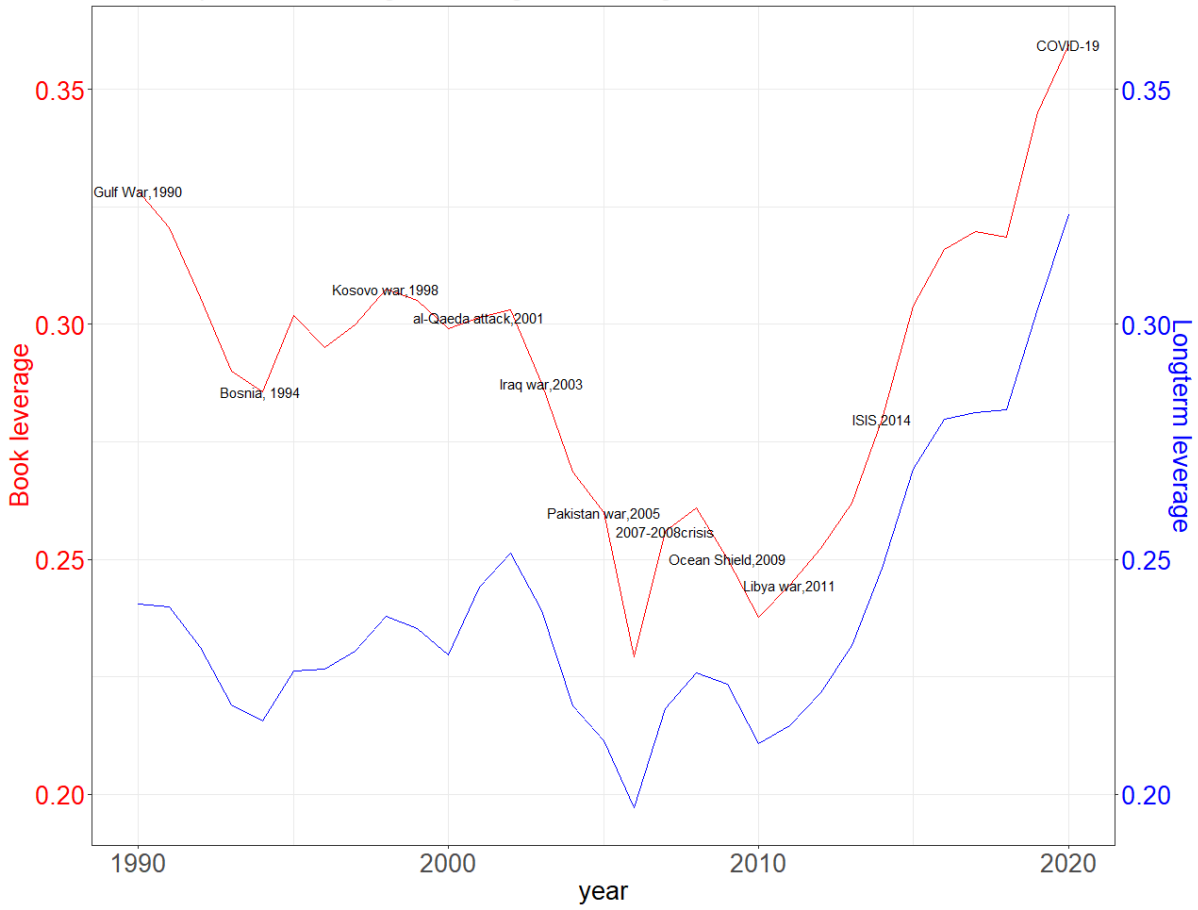


This figure compares corporate effective interest rates for small and large firms. We have small firms in red and large firms in the blue line. The corporate effective interest rate is also higher for small firms. This corroborates that the cost of debt is higher for small firms. Larger firms are the firms located in the 10th decile, while smaller firms are the firms located in the bottom 50 per cent. In the figure, we indicate the major wars in which the USA was involved.



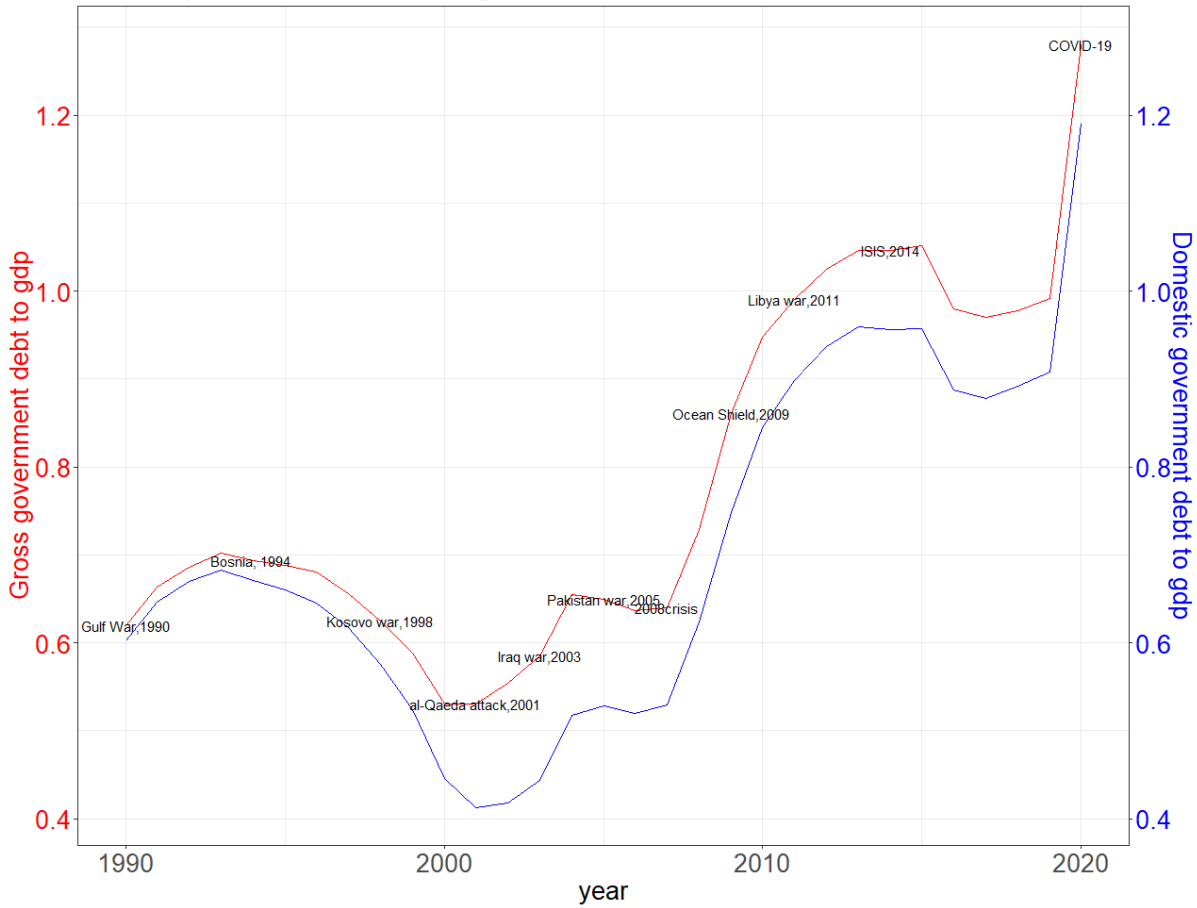
This figure compares the book leverages of small and large firms. We have small firms in red and large firms in blue. In the period 1990-2006, there was a significant decrease in book leverage for both small and large firms. But, after the global financial crisis, the situation changed. We have a significant increase in book leverage only for large firms. Larger firms are the firms located in the 10th decile, while smaller firms are the firms located in the bottom 50 per cent. In the figure, we indicate the major wars in which the USA was involved.

USA sample: Book leverage and long term leverage



This figure presents the time series of book leverage for the USA data sample. This figure compares the ratio of total corporate debt to total assets and the ratio of long-term debt to total assets. In the figure, we indicate the major wars in which the USA was involved.

USA sample: Gross and domestic government debt to GDP



This figure presents the time series of government debt for the USA data sample. This figure compares gross government debt and domestic government debt. In the figure, we indicate the major wars in which the USA was involved. In the figure, we indicate the major wars in which the USA was involved. After the Al-Qaeda terror attack, the USA was fighting terror groups, and this led to an increase in its borrowing.

Reference

Baines, J., & Hager, S. B. (2021). The Great Debt Divergence and its Implications for the Covid-19 Crisis: Mapping Corporate Leverage as Power. *New Political Economy*, 26(5). <https://doi.org/10.1080/13563467.2020.1865900>