

**Onset of new business? Private Military and Security Companies and Conflict Onset in Latin America, Africa, and Southeast Asia from 1990-2011**

Ulrich Petersohn

University of Liverpool

Word Count 11,000.

Keywords: Private Military and Security Company; Civil War Onset; Market for Force

The aim of this investigation is to answer the crucial question of whether private military and security companies (PMSCs) affect conflict onset. It draws on the recently released Private Security Events Database, containing data on PMSC-related events across Latin America, Africa, and Southeast Asia. Employing a Cox Proportional Hazard model, the article explores whether the presence of PMSCs, the duration of PMSC presence, the type of service provided, and the number and type of clients affect conflict onset. Overall, the presence of PMSCs increases the likelihood of conflict onset, although its substantial effect was slight.

Since the growth of a market for force in the 1990s, in which private military and security companies (PMSCs) provide force and force-related services to customers, controversy about the effects of commercialization of war has mounted. The trend has given oxygen to concerns about the organization of the international system changing into a neomedieval order. In a neomedieval order the threshold for the use of military force is lowered as any actor is able to contract for warfare services. In short, the order is market by an increased frequency of war resulting in a 'chaotic anarchy' or 'durable disorder'.<sup>1</sup> However, others reject the notion that the market for force heralds the end of the statist order, albeit acknowledging an increase in the privatization of force.<sup>2</sup> Taking a more optimistic view, such authors see the market as an opportunity to increase stability of the current international order by strengthening weak and providing resources to end conflicts. To that end, PMSCs can provide military support, security, and training to governments under domestic pressure, as well as support security sector reforms and reconstruction efforts.<sup>3</sup> In short, there is disagreement about the repercussions of the growth of the market for force. It may either increase the stability of the international system, i.e. conflict onset may be decreased, or it may provide support the neomedieval argument if instability increased, i.e. conflict onset became more frequent.<sup>4</sup> The article therefore investigates the question as to whether PMSCs do influence the onset of conflict?

Despite the debate, few researchers have investigated the market for force and its impact on conflict dynamics. In particular, the literature on civil war is surprisingly silent on the role of armed commercial actors, possibly because structural approaches have dominated in research on civil war. Those approaches promote the analysis of variables such as regime type, primary commodities, geography, and ethnic diversity to explain the duration, termination, or severity of civil wars, whereas actor-level variables have been less frequently examined.<sup>5</sup> More recently, however, as actor-specific data have been introduced into the debate, the resulting shift in focus has yielded several important studies on conflict dynamics associated with specific participants in civil wars, including paramilitary units, warlords, and ethnic groups.<sup>6</sup> Nevertheless, commercial actors in military conflicts have yet to be considered. Likewise, the PMSC literature has yet to provide systematic investigations of the relationship between civil war and commercial private force. To date, in only a handful of case studies, usually focusing on Africa, have researchers examined PMSCs and conflict dynamics.<sup>7</sup> A plausible explanation for the lack of systematic investigation is the absence of adequate data. Until recently, only lists about mercenary absence and presence and a limited data set representing PMSCs' activity in weak states were available to researchers.<sup>8</sup> Despite such limited resources, some authors have attempted to investigate PMSCs' impact by statistical means across multiple cases.<sup>9</sup> Although those studies marked important steps forward, the lack of data providing sufficient scope and detail remained problematic. More recently, however, access to data improved significantly with the release of the Private Security Events Database (PSED) in February 2019, which comprises data from across three regions—Africa, Southeast Asia, and Latin America—from 1990 to 2012, including detailed information about PMSCs, their services, and their clients.<sup>10</sup> This investigation takes advantage of the new data.

In what follows, the article first discusses theoretical arguments provided in the literature and delineates five testable hypotheses. That section begins by introducing specific predictions about the impact of privatized force on conflict onset, i.e. the effect of absence and presence of PMSCs and conflict onset, the type of service, the number of clients and their type, and the duration of the presence of PMSCs in the country. In the subsequent section, the research design is discussed, with specific attention to introducing two statistical models used—the Cox proportional hazards model and

a logistic regression model—as is the selection of the control variable. Last, an analytical section presents a discussion of the findings. The overarching conclusion is that PMSCs increase the likelihood of conflict onset, although the actual substantial effect is exceptionally small.

## 1. Theoretical Considerations

The debate on neomedieval-order-debate provides a general framework for analysis, it is a matter of debate how the market for force actually affects the stability, i.e. the likelihood of conflict onset. First, a prominent argument focuses on how the mere presence of the market may increase the likelihood of conflict onset. A second take states that the number of actors able to access force interests, and the type of actor make a difference. A third school of thought is more concerned with what is actually traded on the market and hence differentiates between the types of services exchanged. Lastly, some scholars argue that the effects of the presence of PMSCs take hold incrementally over time. In the subsequent section these arguments will be fleshed out and specific hypotheses will be delineated.

### *Presence of the market and conflict onset*

A highly prominent concern is that the mere presence of the market for force increases the likelihood of conflict onset. According to Janice Thomson as part of their sovereignty, states are responsible for any acts of violence they sanction or which is emanating from their territory. If a state deploys its own forces it is clear to its peers who is sanctioning the actions and whom to hold responsible. The market for force, in contrast, provides states with an opportunity to pursue their goals without or little responsibility. Force related services can be contracted and the relationship between the market actor and the state, or the at least the actual scope of the contract can be kept confidential. In any case, the state gains some form of plausible deniability which circumvents accountability.<sup>11</sup> As it is difficult for other to determine by whom or whether a specific act is officially sanctioned, the costs for employing violence are reduced. Accordingly, the presence of the market for force makes employing violence an attractive option in the international system.

A related argument focuses on the domestic costs of foreign intervention. In liberal democracies, governments face parliamentary oversight and have to justify policies before a broad public selectorate upon whom their re-election depends. Any democratic government that disregards parliamentary or public concerns has to pay severe political costs, including difficulties in the policymaking process and in re-election.<sup>12</sup> Although the selectorate for leaders in autocracies and illiberal democracies is smaller and maintaining power is easier for them than in liberal democracies, the political and reputational costs of military deployment have to be taken into account as well.<sup>13</sup> PMSCs permit governments to circumvent such constraints, because the market enables them to access military force without deploying their own militaries.<sup>14</sup> In turn, such services afford governments plausible deniability if contracted forces mishandle situations, since parliamentary oversight has decreased and the risk of engagement has shifted from the military to contractors, all of which collectively lowers the political costs of intervention.<sup>15</sup> Considering all of the above, Hypothesis 1 proposed that the presence of PMSCs increases the likelihood of conflict onset.

### *Number/ type of clients and conflict onset*

Implicit in the discussion about a neomedieval order is that the number of actors with access to means of violence increases. That trend has been of major concern to scholars, for the state's monopoly on

force is regarded as a cornerstone of the mitigation and reduction of violence.<sup>16</sup> From an extreme view, the emergence of PMSCs has eroded the monopoly on force or, less dramatically, substantially reconfigured the organization of force by shifting authority and power from the state to market actors.<sup>17</sup> In either case, the more actors with access to means of violence, the greater the likelihood of dissatisfied ones who are willing to employ those means to pursue their interests.<sup>18</sup> By comparison, the state also wages war at times, from a normative statist perspective it does so on the behalf of communal interests. However, if individuals, ethnic groups, and corporations gain access to the market for force, then they can wage war for particular interests, including personal or group gain, ideology, or political ends.<sup>19</sup> Accordingly, Hypothesis 2 proposed that the more actors with access to PMSC services, the higher the likelihood of conflict onset.

However, in the neomedieval debate it is not only the number but also the types of clients that employ PMSCs have attracted the attention of scholars. Arguably, governments are the most important clients for most PMSCs, because large contracts to supply and support conventional militaries are worth billions of dollars. At times, a government's immense demand for force can even create a monopsony, in which the state is the predominant buyer of PMSC services.<sup>20</sup> For the large share of PMSCs that seek to shed their sector's mercenary image and present their businesses as legitimate and legal ones, contracting with reputable states affords a means to achieve those ends.<sup>21</sup> However, from a normative statist perspective, the prominent market share of governments may contain the use of force. However, some have underscored the opposite effect: that the increased availability of force to governments inadvertently increases conflict onset. For one, weak governments now have the opportunity to contract external military support against internal opposition if they fail to obtain other forms of support from the outside.<sup>22</sup> That affordance enables clients to obtain quick fixes to compensate for their limited military capacity by employing private forces that can substitute for or supplement their own, as well as to pursue interests with military force—for example, the reclamation of territorial control—that they would have been unable to pursue otherwise.<sup>23</sup>

In short, the PMSC industry has an “enabling effect” on a government's tendency to wage war.<sup>24</sup> However, the legitimate PMSC market caters to more than just government clients. Large transnational corporations (TNCs), international organizations (IOs), nongovernmental organizations (NGOs), and private individuals operating in conflict zones all demand security services as well. Nevertheless, compared to governments, that segment of the market is small and rarely contracts operational military services. Although the bulk of its demand is for armed security, security consultancy, and logistics services that tendency does not negate the impact of the presence of PMSCs on the likelihood of conflict onset.<sup>25</sup> For instance, even though the United Nations has used PMSCs extensively for logistics and security, and armed PMSCs have indeed been hired to support peace operations.<sup>26</sup> Although a status quo oriented organization, the option of the market for force makes it more prone to employing violence to maintain stability.<sup>27</sup> TNCs have also relied upon the market for force to protect their operations against insurgents, criminals, and pirates.<sup>28</sup> Although such services have overwhelmingly been used in a defensive capacity, this may increase the likelihood of conflict onset nonetheless. Concerns have been raised that the purpose of their use could change. As Sean McFate has warned, “If money can buy firepower, then large corporations and ultra-wealthy individuals could become a new kind of superpower.”<sup>29</sup> That possibility would not mean, for example, that rival mining companies would hire PMSCs to directly fight competitors for the control of valuable mining resources.<sup>30</sup> Nevertheless, TNCs could mobilize PMSC-based solutions to gain access to

resources by supplying contacts or funding that would enable governments to employ such companies.<sup>31</sup> Accordingly, IOs and TNCs have clear interests in contracting for logistics and security services, and at times, they might even employ more offensive services. Although that development increases the likelihood of conflict onset, the impact of the IO–TNC–NGO market segment on conflict onset is less than that of government clients.

The smallest market segment seeking contracts with PMSCs is that of rebel groups. Not only are opportunities for profit fewer by contracting with such groups, but the segment is also considered to be illegitimate.<sup>32</sup> Although such contracts pose a risk for PMSCs as a result, the so-called “illegitimate” segment of the market has substantial influence on the likelihood of conflict onset nonetheless. If rebel groups require only motivation and an opportunity to rise up, then PMSCs can make a significant difference in the availability of the latter.<sup>33</sup> Whereas weak rebel groups, fearing defeat, might hesitate to rise up against a government, resources available from the market for force could alter their calculations. If funding can be generated from the support of the diaspora, the taxation of controlled areas, or the exploitation of natural resources, then weak actors can compensate for their inadequacies by hiring private armies.<sup>34</sup> Therefore, contracts between PMSCs and the groups can be expected to increase the likelihood of conflict onset. The small size of their market segment, however, suggests that their overall impact on conflict onset is less than that of government clients.

Altogether, the government-affiliated segment of the market likely contributes more to conflict onset than the other two segments. After all, the public sector is large, PMSCs are willing to supply services to governments, and government clients frequently have the intent to escalate. By contrast, the size of the TNC–NGO–IO sector might be substantial, the supply of PMSCs might be unproblematic, since the clients generally lack the motivation to wage war. By further contrast, in the market of rebel groups, although clients are eager to wage war, the supply of PMSCs may be limited, and the market is small in the first place. Based on the above, Hypothesis 3 proposed that government contracts increase the likelihood of conflict onset more than contracts with rebel groups and other types of clients.

#### *Type of service and conflict onset*

The on the market for force provides arguments not only about the number and type of actors but also on the types of services that they offer. Although all PMSCs supply force and force-related services, they vary in their proximity to combat.<sup>35</sup> At one extreme, PMSCs take control of combat for their clients, who can purchase entire armies “off the shelf,” so to speak, or significant military capabilities on the market. Armed services have indeed received the most attention from scholars, although a large part of PMSC services are unarmed and geared toward maintenance, training, or consultancy.<sup>36</sup> Both types of services—armed and unarmed—have the potential to influence conflict dynamics, however. On the one hand, in providing armed services, PMSCs replace or directly support the forces of the host state. The influx of highly trained military and security operatives increases the client’s overall capacity to wage war and overcome opponents.<sup>37</sup> Armed services providers may also improve the client’s offensive as well as defensive combat skills by, for instance, introducing new military tactics or establishing superior command-and-control systems.<sup>38</sup> Security contractors, unlike combat providers, are contracted to perform defensive tasks only. Nevertheless, they improve the overall defensive fighting skills of a client’s forces. Moreover, PMSC personnel may be able to relieve

military and security personnel and, in turn, make them available for offensive military operations. PMSCs offering unarmed consultancy and training, by contrast, do not replace the client's forces. Instead, they provide those forces with advice on how to best structure security operations and enhance their military skills by supplying strategic, operational, and tactical knowledge.<sup>39</sup> Such activities can significantly reshape the operational environment for the client's forces by furnishing them with valuable expertise and training on how to engage an opponent. Meanwhile, logistics and support contractors improve the availability and quality of weapons systems and of the logistics chain. With those PMSC services, the client's armed forces can field and maintain its weaponry and increase its efficiency by improving the tooth-to-tail ratio.<sup>40</sup> If PMSC personnel take over the management of support tasks, then fewer security and military personnel are preoccupied with maintenance tasks, and as the upshot, commanders have more troops available to assign to combat tasks.<sup>41</sup> Although both types of services increase the likelihood of conflict onset, their impact varies due to several crucial differences. First, training and logistics improve the client's ability but require time and effort, whereas armed PMSCs can be deployed immediately. Second, armed PMSCs bear the risk on the battlefield and decrease political costs as a result, whereas training and logistics services continue to saddle clients with the risk. Given all of the above, Hypothesis 4 proposed that the presence of armed PMSCs increases the likelihood of conflict onset more than that of unarmed PMSCs.

#### *Market logic and conflict onset*

The supply-and-demand dynamics unfolding on the market for force arguably exert an independent influence on conflict onset. It is generally assumed that, for PMSCs, war is an economic opportunity to supply their services to meet customers' demands.<sup>42</sup> However, Anna Leander has added that PMSCs do not necessarily supply services exclusively to meet the needs and demands of clients.<sup>43</sup> To stay in business, a PMSC requires demand for its services, and to that end, it seeks to shape a client's understanding of the threat environment. In other words, instead of responding to independent demands, PMSCs make clients aware of what they need to assure their security. In that role, PMSC representatives are uniquely positioned to influence clients as security experts who provide consultation about potential threats. In short, PMSCs supply services and can create demand for those services. That dynamic increases the likelihood of violence, for the client's understanding of the problem and the relative effectiveness of available military means are shaped by the PMSC's provision of the same services.<sup>44</sup> As a result, the market for force becomes self-perpetuating by creating supply and demand independently of the actual threat environment.<sup>45</sup> That circumstance suggests that the longer PMSCs are present in a country, the better they can shape clients' perceptions, build networks and trust to create demand for their services, and convince clients of the suitability of force-related solutions. Therefore, Hypothesis 5 proposed that the longer PMSCs are in a country, the higher the likelihood of conflict onset.

## **2. Data: Conflict Onset and Private Military and Security Companies (PMSCs)**

To investigate the hypotheses, two data sets were combined. First data about PMSCs was obtained from the Private Security Event Dataset (PSED), which records any “newsworthy activity, action, or outcome in which one or more private security providers were involved.”<sup>46</sup> The data set covers events involving PMSCs in Africa, Latin America, and Southeast Asia between 1990 and 2012. Second, data on armed conflicts, was obtained from the armed conflict data set of the Uppsala Conflict Data Program (UCDP), which contains information about armed conflicts that occurred between 1946 and 2011.<sup>47</sup> The temporal overlap of the two data sets for years from 1990 to 2011 constituted the period under investigation.

## 2.1 Dependent Variable: Conflict Onset

Conflict onset is a rare event. According to the UCDP, conflict onset occurs when a contested incompatibility between a government and another party results in at least 25 battle-related deaths.<sup>48</sup> For the purpose of the investigation presented here, onset was coded categorically; any case without violence or violence amounting to fewer than 25 battle-related deaths was coded as “0,” whereas any case with violence amounting to more than 25 such deaths was coded as “1.” The UCDP data set is organized in country-years, which allows its users to determine the number of battle-related deaths each year as well as the exact year of conflict onset. Since data in the PSED do not refer to years before 1990, the investigation did not include cases of conflict onset prior to that year, although cases occurring in 1990 remained in the data set.<sup>49</sup> Likewise, a case was coded as conflict onset as soon as it met the criterion for conflict onset. It was not reclassified even if its level of violence subsequently fell below the threshold of 25 battle-related deaths within the period under investigation.

The data set for the period from 1990 to 2011 contained 1,144 observations (i.e., country-years) across 86 countries in Africa, Latin America, and Southeast Asia. After the observations with ongoing conflicts were dropped, 1,087 observations remained in the data set; 1,057 were non-conflicts, whereas 30 involved conflict. Figure 1 shows the number of conflict onsets across the period under investigation.

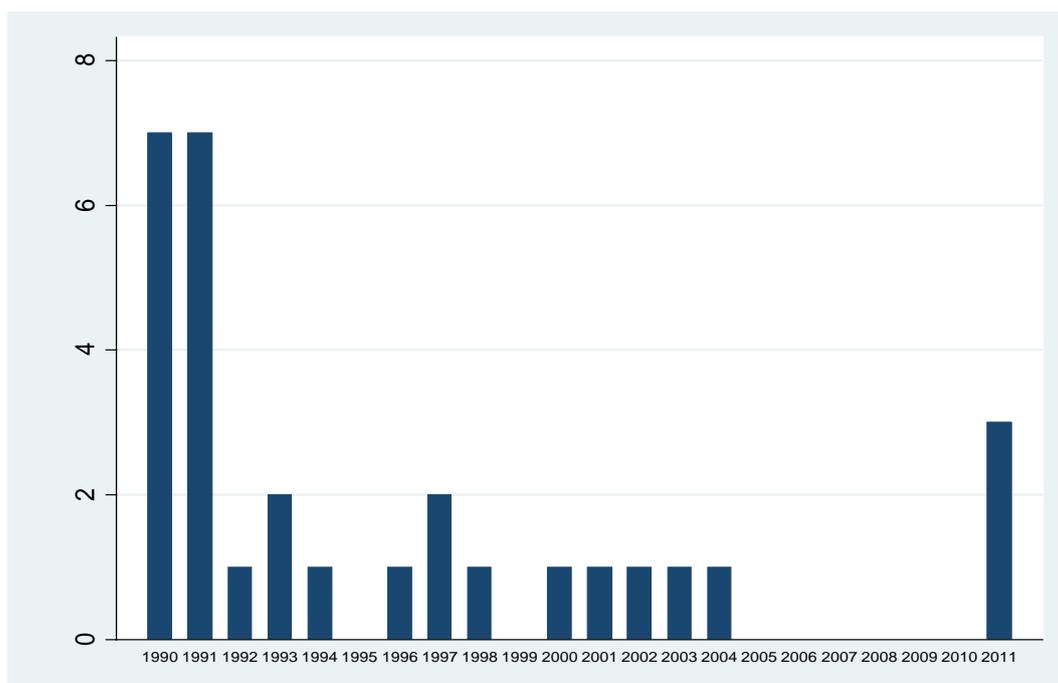


Figure 1: Onset of armed conflicts in Africa, Latin America, and Southeast Asia, 1990–2011

## 2.2. Variable of Interest: Private Military and Security Companies (PMSCs)

PMSCs are corporate legal entities that provide force and force related services to clients in a market.<sup>50</sup> The following paragraphs detail the operationalization of the independent variables.

*PMSC absence or presence (Hypothesis 1):* Testing Hypothesis 1 sought to establish whether the presence of PMSCs affects the onset of armed conflict (variable: PMSC Presence). In total, PMSCs were present in 204 observations. Figure 2 shows the frequency distribution of PMSCs across all regions during the period under investigation; they were most often present in Africa (120 observations), followed by Latin America (68 observations) and Southeast Asia (16 observations).

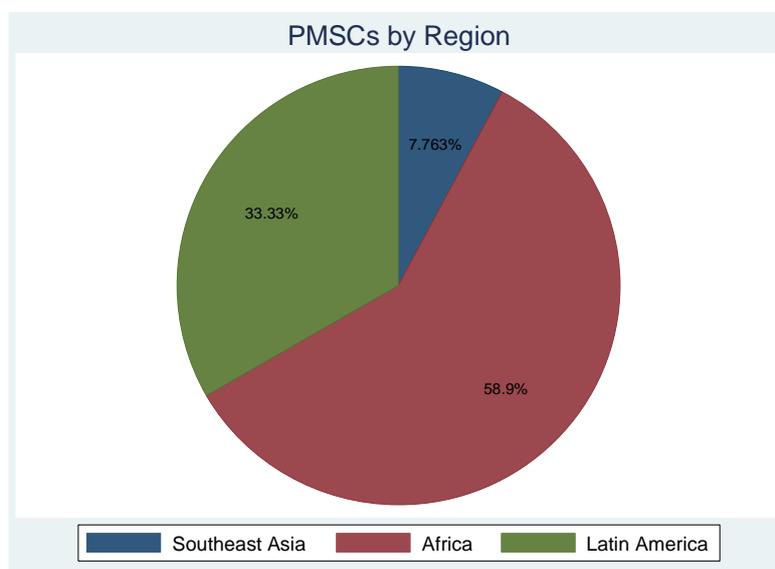


Figure 2: Distribution of private military and security companies (PMSCs) by region, 1990–2011

*Frequency of clients and type of clients (Hypotheses 2 and 3):* Data in the PSED permit the differentiation of 12 types of clients, including governments, rebel groups, criminal organizations, and private individuals. To ascertain the total number of clients with access to the market for force in a country in a given year, all clients across all 12 client categories were totaled (Hypothesis 2). If the same client appeared more than once in a given year in the PSED, then that case was counted only once. For instance, if two events with a local government as a client were registered, it could not be determined whether it was the same government or two different ones. Accordingly, a conservative counting solution was adopted that assumed only one client (Table 1).

Table 1: Number of contracting clients

	Number of clients			
	0	1	2	≥3
Frequency of observations	922	61	62	42

Note: The maximum was seven clients (one case).

To test Hypothesis 3, the 12 client categories of the PSED were consolidated into only three: governments, rebel groups, and others. Whereas the category of governments comprised two separate government-affiliated categories in the PSED (i.e., local and national), the category of rebel groups is not differentiated in the database. The remaining category included all actors other than governments and rebel organizations. Table 2 shows the frequency distribution across the three categories.

Table 2: Frequency of different types of clients

	Type of client		
	Government	Rebel group	Other
Frequency of observations	65 (32%)	41 (20.2%)	97 (47.8%)

*Armed and unarmed PMSCs (Hypothesis 4):* The PSED differentiates PMSC services, ranging from combat and security to unarmed consultancy and support services. Based on that detailed information, the type of service variable could be constructed. For the investigation, two categories of services were differentiated: armed versus unarmed services (variables: PMSCarmed and PMSCunarmed, respectively). The former comprises combat and armed security services, whereas the latter comprises all other services. Figure 3 shows the total number of armed and unarmed PMSC services in Africa, Latin America, and Southeast Asia from 1990 to 2011.

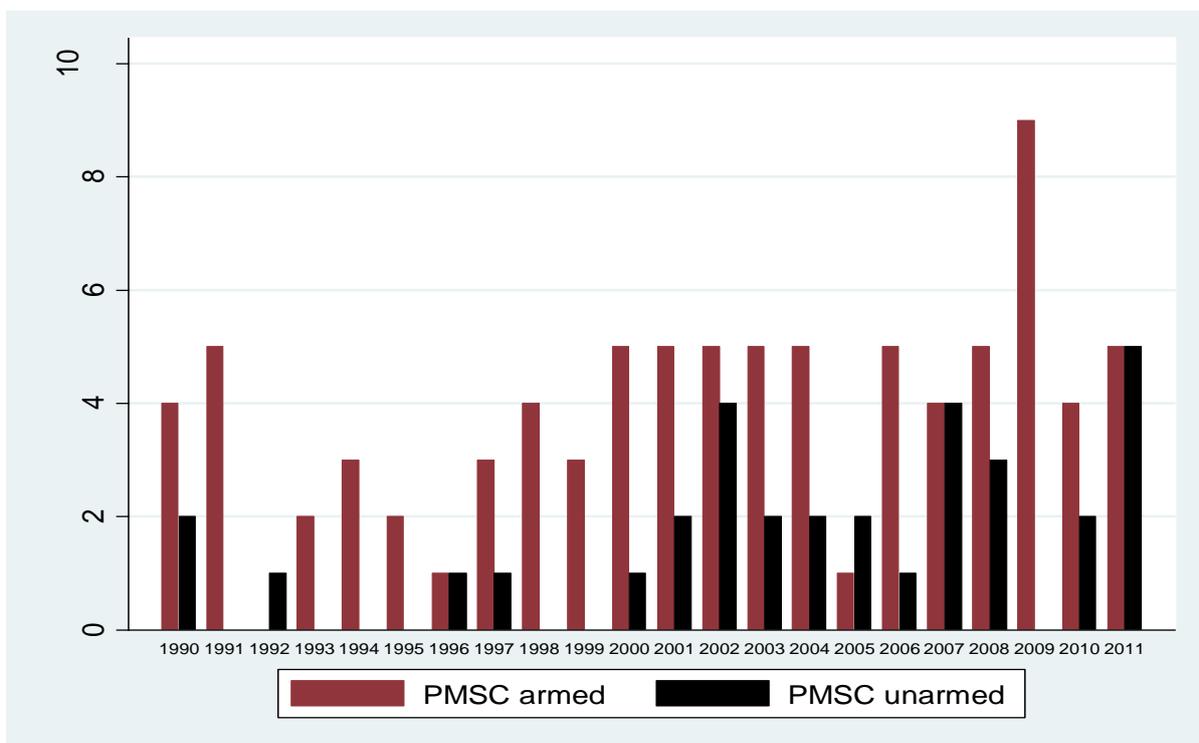


Figure 3: Presence of armed and unarmed private military and security companies (PMSCs) in Africa, Latin America, and Southeast Asia, 1990–2011

*Length of contractual relationship (Hypothesis 5):* Hypothesis 5 proposed that the length of time that PMSCs remain in a country affects conflict onset. The variable for that idea did not capture the duration of a contract between two actors but the duration of the uninterrupted presence of PMSCs across clients and services in a country. If no contract existed or no information was available for a given year, then the presence of PMSCs was considered to be interrupted, and the measure was reset to 0 (variable: PMSC Period). Table 3 shows the frequency of the uninterrupted presence of PMSCs; the percentage indicates the share of the respective category in relation to the total number of observations.

Table 3: Uninterrupted presence of private military and security companies (PMSCs)

	<b>Uninterrupted presence of PMSCs</b>				
	<b>0</b>	<b>1–3 years</b>	<b>4–6 years</b>	<b>7–9 years</b>	<b>10 years</b>
<b>Frequency of observations</b>	910 (81%)	174 (15%)	25 (2%)	16 (1%)	5 (0.3%)

### 2.3 Control Variables

The literature provides diverging guidance regarding the inclusion of control variables. Ray and Achen have recommended limiting the number of control variables to three, because any meaningful interpretation of models with more than three variables is impossible.<sup>51</sup> However, Oneal and Russert have argued that the inclusion of control variables should be guided by theoretical considerations, for important relationships might be overlooked otherwise.<sup>52</sup> In the investigation presented here, the strategy for selecting control variables follows Ray’s advice by including only control variables if they had the potential to influence both the variable of interest (i.e., PMSCs) and the dependent variable (i.e., conflict onset). Variables associated with the dependent variable only and not the independent variables were dropped. Their inclusion seems unnecessary as the goal here is not to build a comprehensive model of conflict onset, yet to assess the impact of PMSC presence on the dependent variable.<sup>53</sup> However, contrary to Ray’s advice, the number of control variables will not be limited to three as methodological concerns should not override theoretical considerations.

First among the control variables were ones for natural resources and income per capita. Despite longstanding evidence that the risk of civil war is greater in poorer countries and fueled by demands to redress grievances, conflict does not erupt in every poor country. According to Chojnacki et al., PMSCs more often participate in civil wars in nations where natural resources are more abundant.<sup>54</sup> To such thinking, Ross has added that PMSCs join the fight also to become able to exploit those resources in the future, although evidence for that argument is rather weak.<sup>55</sup> Alternatively, it seems more plausible to assume that natural resources enable parties to the conflict to pay for PMSC services. As such, natural resources were regarded as a confounder and included in the investigation. With reference to Paivi’s data set on natural resources, natural resources were differentiated in gas

and oil production, and the presence of gemstones.<sup>56</sup> Both variables were dummy-coded at the country level (variables: GasOil and Diamonds, respectively).

Another control variable, state strength or weakness, was used because weak institutions have long been regarded as critical in the onset of armed conflict. According to Fearon, the strength of the state is a crucial factor of insurgency; after all, if insurgents oppose poorly financed, disorganized government troops, then their likelihood of survival and success increases.<sup>57</sup> Consequently, rebellions in stronger states are less likely. At the same time, state strength also influences the need for PMSCs. Weak states may welcome the opportunity to acquire military expertise on the market, while rebel groups facing strong states may mobilize PMSCs as a way to even the odds.<sup>58</sup> Taken together, state strength or weakness influences both sides of the equation and was thus included as a control variable. Because state strength and weakness is a multidimensional concept for which different indicators have been used, this investigation captured state strength by including two indicators of military strength: military expenditure per soldier and military personnel per capita. The first indicator served as a proxy for quality. According to Bennett and Stam, military expenditure per soldier reflects the level of training and quality of equipment of an armed force.<sup>59</sup> By contrast, the second indicator sought to capture a state's ability to wage a counterinsurgency campaign. Conventional wisdom suggests that counterinsurgency requires ample military and security personnel. Although the exact ratio between a government and insurgents remains unclear, Thiel has posited that a government requires substantially more forces to control its territory and provide security.<sup>60</sup> Nevertheless, the best indicator to measure the adequacy of an armed force is troops per inhabitant, because troop density positively correlates with the success of a counterinsurgency.<sup>61</sup> The raw data to generate the indicators was obtained from the World Bank's database, and expenditure was recorded in current USD.<sup>62</sup>

Yet another control variable, regime type, has surfaced as a crucial factor of conflict dynamics.<sup>63</sup> Initial findings have suggested that risk of conflict follows an inverted U-shape; whereas democracies and autocracies are associated with a low risk of armed conflict, semi-democracies are associated with a high one.<sup>64</sup> Although such findings have been challenged and the debate remains ongoing, researchers have observed that the presence of democratic institutions, which provide a means of peaceful negotiation, alters the risk of civil war.<sup>65</sup> At the same time, different regimes may have different propensities to hire PMSCs; democracies may seek to reduce casualties, whereas dictatorships may seek to avoid strengthening internal rivals (e.g., the military) in order to reduce the possibility of a coup. Regime type also may exert an influence on the propensity and ability of rebels and other actors to contract PMSCs. For instance, dictatorships may more tightly control force related expertise or even keep parts of the military ineffective.<sup>66</sup> The lack of training and expertise poses a problem for potential rebels, prompting them to seek out alternatives on the market. Likewise, other clients, such as TNCs, may be less able to turn to private force providers for security due to the stricter control of the market for force in dictatorships.<sup>67</sup> Therefore, regime type was considered to be associated with the independent and dependent variables and, in turn, included as a control variable. Data on regime type were drawn from the Polity IV data set, especially the variable Polity2 (variable: Political Regime), and regimes were operationalized on a scale from -10 (*strongly autocratic*) to 10 (*strongly democratic*).

When investigating conflict onset, researchers have typically examined population size, ethnic composition, and mountainous terrain as control variables as well. Regarding population size, the dominant argument has been that the larger the population, the higher the likelihood of conflict.

Within that dynamic, if a certain likelihood of initiating a rebellion is attached to an individual in a given population, then the risk of conflict increases as the population becomes larger.<sup>68</sup> Likewise, ethnicity and ethnic identity as causes of armed conflict have received considerable attention from scholars, although Mueller has offered an opposing view.<sup>69</sup> Whereas some researchers have proposed that such factors relate only because elites manipulate ethnic masses, others have considered the relative shifts in population size among ethnic groups to be crucial.<sup>70</sup> Last, terrain has also been regarded as a crucial part of a rebel group's opportunity structure. After all, the more mountainous the terrain in a contested area, the more difficult it is for the government to control the area and the likelier it is that a rebellion will survive.<sup>71</sup> Although all three of those variables are associated with the dependent variable, they are not clearly associated with the independent ones; population size and terrain, for instance, bear no impact on the presence of absence of PMSCs. Because variables should not be introduced as control variables merely due to their association with the dependent variable, all three of those variables were excluded from the models despite being used in previous models for conflict onset.<sup>72</sup>

### 3. Analysis of Conflict Onset

To test the hypotheses, five regression models were developed. Although researchers investigating conflict onset have mostly employed logit regression models, the investigation presented here relied entirely on the Cox proportional hazards (CPH) model with one exception.<sup>73</sup> The CPH model was selected because logit models do not take time dependency into account but instead treat every observation as independent—for instance, events in 1994 as being independent of events in 1993. That assumption is not only highly idealized but also makes less efficient use of the available information than the CPH model.<sup>74</sup> Accordingly, the investigation involved focusing on the impact of PMSCs in terms of risk—that is, survival of non-conflict years—with the CPH model. At the same time, the CPH model imposes a restrictive assumption about the functions of risk: that the magnitude of a risk's effects remains proportional across the investigated period.<sup>75</sup> That assumption may be violated, however, if a factor disproportionately influences risk over time—for example, if the risk of conflict decreases the longer that peace lasts. Because the possibility of non-proportionality consequently needs to be taken into consideration, the proportionality assumption was tested for each model. If it was violated, then the model was adjusted by including a time-interaction variable of variable violating the assumption.<sup>76</sup>

In a distinct model, the investigation deviated from the standard CPH technique, namely by applying logistics regression to examine the impact of the uninterrupted presence of PMSCs. Employing a CPH model for that variable would have created some inconsistencies. For one, a CPH model could assess the impact of PMSCs on conflict onset by assessing the duration of non-conflict years. However, if there is an uninterrupted presence of PMSCs for four years, for instance, this is by definition already a longer period of duration of non-conflict years. To avoid that inconsistency, a logit model was employed. However, the logit model comes with some shortfalls itself. First, a logit model treats observations as being independent, which in the investigation meant that it could not differentiate whether the presence of PMSCs for one year was part of a longer period of presence. Consequently, the effect of time was captured only by scores on the independent variable (variable: PMSC Period). Second, a convention of political science has been to use logistic models without censoring to avoid the loss of information. However, in the investigation at hand, a country experiencing an onset of conflict was censored. The underlying assumption in is that a country is either at conflict or not. Whether it experiences one or more conflicts at the same time is not taken into consideration. The main reason for this because the data set was organized in terms of country-years, not conflicts.<sup>77</sup> The results of the CPH and logistic regression appear in Table 4.<sup>78</sup>

Table 4: Results of the Cox proportional hazards (CPH) and logistic regression (LR) models

	CPH model				LR model
	Model 1	Model 2	Model 3	Model 4	Model 5
<b>PMSC Presence</b>	14.402* (17.635)				
<b>PMSC x InTime</b>	0.477 (0.241)				
<b>Number of Clients</b>		2.69^ (1.577)			
<b>Clients x InTime</b>		0.812 (0.185)			
<b>Government</b>			13.445^ (19.82)		
<b>Government x InTime</b>			0.541 (0.308)		
<b>Rebel</b>			1.136 (1.303)		
<b>Other Client</b>			2.653 (1.935)		
<b>PMSCarmed</b>				1.533 (1.373)	
<b>PMSCunarmed</b>				5.704^ (5.663)	
<b>PMSCunarmed x InTime</b>				1.062 (0.298)	
<b>PMSC Period</b>					1.419** (0.184)
<b>Political Regime</b>	0.878*** (0.032)	0.888*** (0.034)	0.885** (0.037)	0.891*** (0.032)	0.859*** (0.04)
<b>Military Personnel/ 1,000 Capita</b>	.989 (0.029)	0.983 (0.031)	0.985 (0.032)	1.000 (0.000)	0.985 (0.036)
<b>Military Expenditure/ Soldier</b>	1.000 (0.000)	1.000 (0.000)	1.000^ (0.000)	1.000 (0.000)	1.000 (0.000)
<b>GasOil</b>	7.495^ (7.975)	16.235** (14.867)	8.319 (9.755)	8.336^ (9.205)	1.159 (0.537)
<b>GasOil x InTime</b>	0.369** (0.192)	0.259*** (0.08)	0.355* (0.156)	0.356** (0.146)	
<b>Diamonds</b>	2.514 (3.193)	0.879 (0.388)	2.738 (3.223)	3.431 (3.804)	0.891 (0.435)
<b>Diamonds x InTime</b>	0.55 (0.3)		0.521* (0.267)	0.484* (0.237)	
<b>Constant</b>					0.023*** (0.01)
<b>N</b>	834	834	834	834	834
<b>Pseudo R<sup>2</sup></b>					0.1

^ $p > .1$  \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$

Model 1 was developed to test whether the presence of PMSCs influences the onset of conflict (Hypothesis 1). The chief effect of their presence is a change in the opportunity structure for rebel groups and governments; PMSCs either enable governments to counter rebel groups or provide rebel

groups with a fighting chance against the state. Therefore, access to means of violence and military expertise in the market for force was assumed to increase the onset of conflicts. The findings of Model 1 (Table 4) suggest that the presence of PMSCs increases the risk of conflict onset and shortens the survival of non-conflict years. Figure 4 shows the probability of a country's remaining at non-conflict over the course of the period under investigation, in which year 0 is 1990. Several conclusions can be drawn from the graph. For one, conflict onset has generally been a highly rare event. As pointed out in the Methods section 2, all countries that had experienced the onset of conflict prior to 1990 were excluded from the model. Accordingly, all countries in the data set were initially not experiencing conflict. By the end of the period, regardless of whether PMSCs were present, more than 90% of the countries had not experienced the onset of conflict.

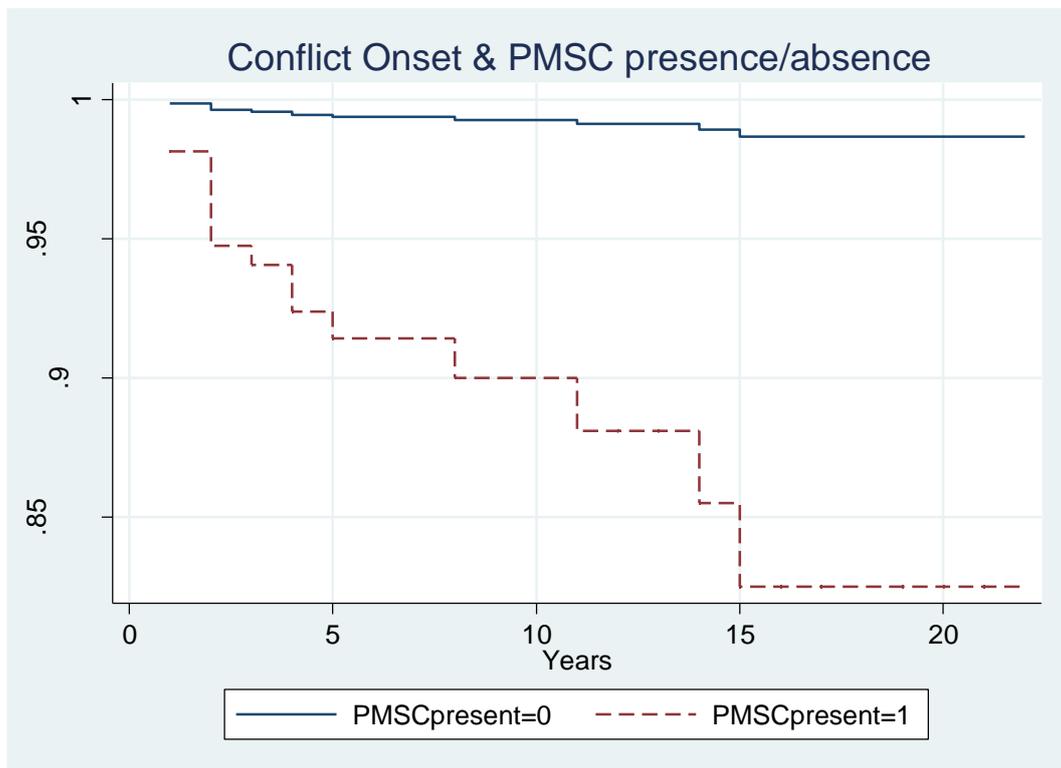


Figure 4: Onset of armed conflict and private military and security companies (PMSCs)

Moreover, a considerable difference emerged in the risk of conflict onset between cases in which PMSCs were present and cases in which they were absent. As revealed in the graph in Figure 4, countries where PMSCs were present experienced substantially more conflict onset. Although approximately 98% of countries without PMSCs present had remained peaceful throughout the period under investigation, that percentage among countries with PMSCs present fell to approximately 83%. Such results suggest a noteworthy difference in relative risk. More precisely, a country's risk of conflict onset when PMSCs were present was 14 times greater than that in countries where PMSCs were absent (Table 4). It seems that access to military services shaped the opportunity structure of actors such that they were more likely to seek a forcible settlement of their differences. However, the results need to be treated carefully. Although PMSCs increased the risk of conflict onset to a large extent, the overall effect of their presence was slight; in fact, the baseline risk of conflict onset in a country-year when PMSCs were absent between 1990 and 2011 was less than 0.001. Consequently, though PMSCs

substantially increased the risk of conflict onset, the actual risk did not exceed 0.01 (Figure 5). Given all of those findings, Hypothesis 1 was confirmed.

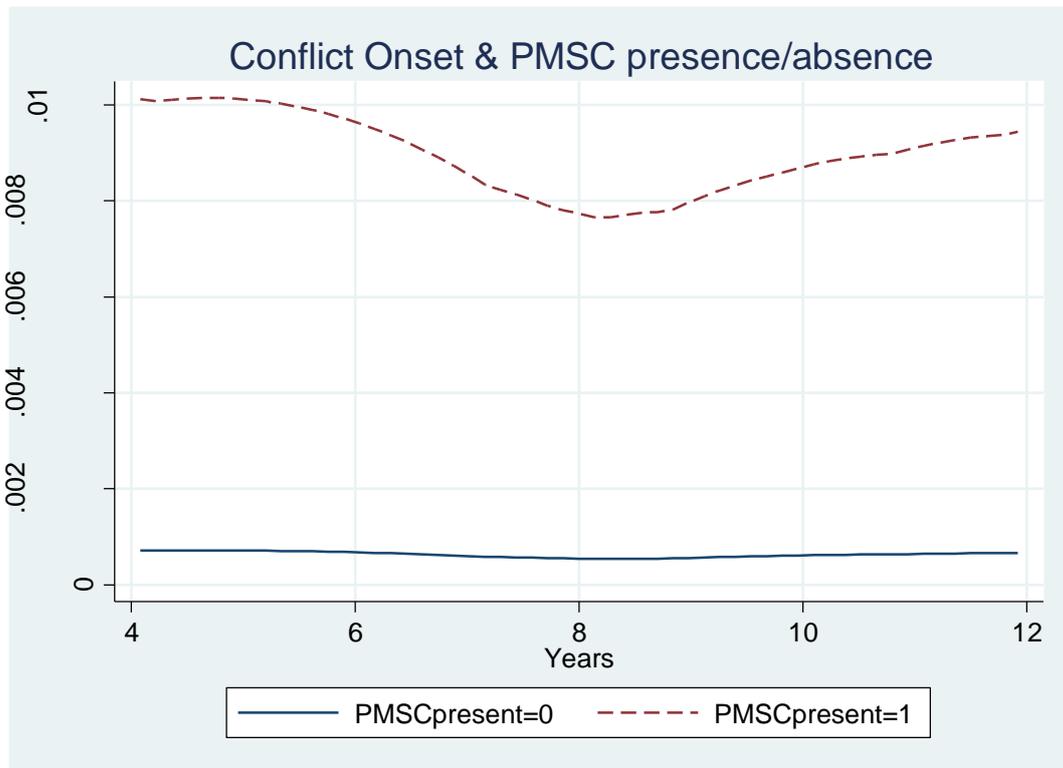


Figure 5: Risk of conflict onset

Model 2 responded to another prominent argument in the literature: that the number of clients with access to the market for force affects conflict onset. Accordingly, Hypothesis 2 proposed that the number of such clients increases the likelihood of conflict onset. The findings suggest that as the risk of conflict onset rose, increasingly more actors gained access to means of violence (Table 4). The estimated average risk of conflict onset increased more than twofold (2.69) with every unit of increase in the number of clients. Figure 6 displays the different risks associated with increasing the number of clients that might contract PMSC services.

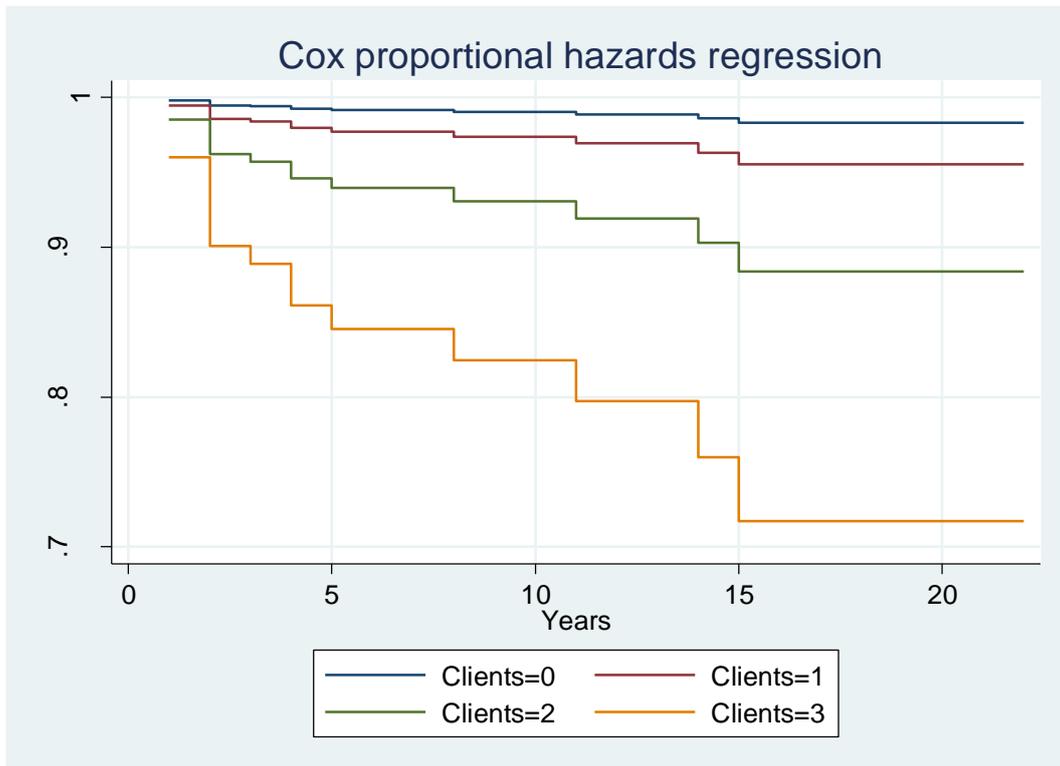


Figure 6: Number of clients and conflict onset

As Figure 6 reveals, if the number of actors increased, so did the risk of conflict onset. Furthermore, having only one client with access versus none did not seem to make a large difference. However, when two, or three (or more) clients drew upon the market for force by contracting PMSCs the risk of conflict onset increased substantially. In the latter category, almost 30% of the cases experienced conflict onset during the period under investigation. That result justifies a concern raised in the literature, namely that the more actors that draw on PMSCs, the more likely that one or more of them will opt to use violence to resolve their disputes. Altogether, the findings confirmed Hypothesis 2.

In contrast the Models 1 and 2, Model 3 was developed to determine whether the type of client affected conflict onset. The model's corresponding hypothesis, Hypothesis 3, proposed that government contracts are more likely than nongovernment ones to increase conflict onset. Although the client categories of rebel groups and other actors were included in the analysis, they did not generate any significant findings. Conversely, government clients were nearly 13 times likelier than nongovernment ones to be associated with conflict onset (Table 4).

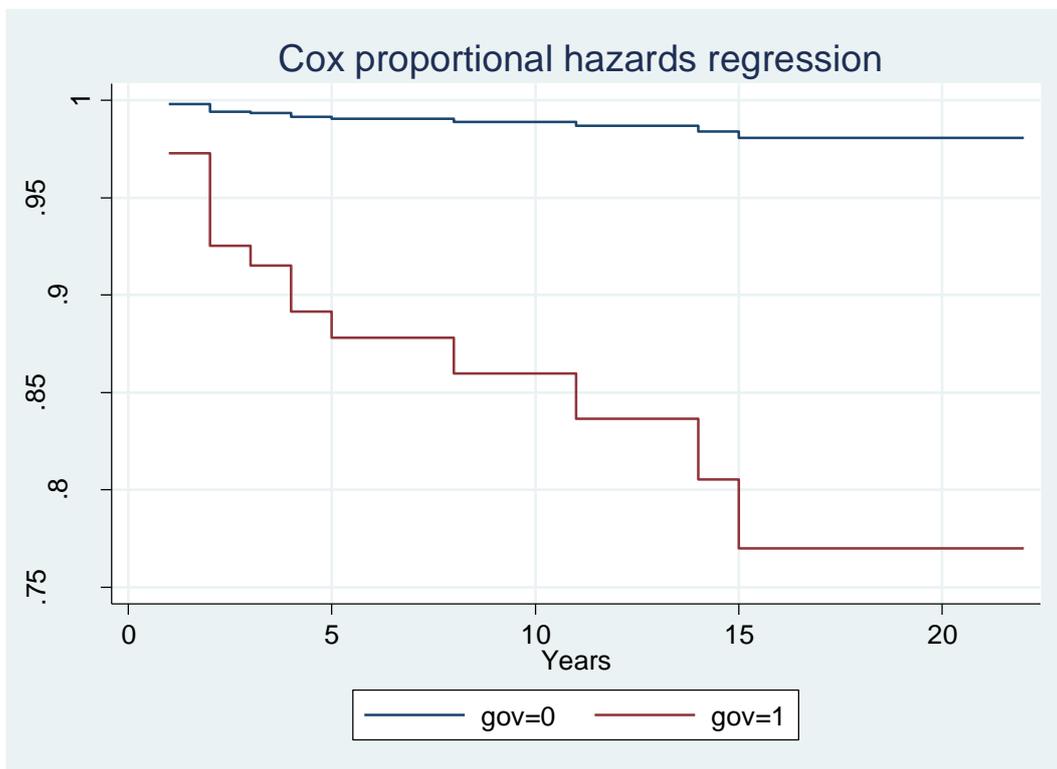


Figure 7: Conflict onset and clients

Permitting a more detailed analysis, Figure 7 illustrates that the risk of conflict onset was substantially affected by government contracts. Although nearly all observations not involving government contracts demonstrated continued peace during the period under investigation, the share of observations involving such contracts and continued peace fell to approximately 77%, meaning that approximately 23% of cases entailed the onset of conflict. That result aligns with the argument that PMSCs are employed by governments to escalate conflicts against domestic opponents. Therefore, Hypothesis 3 was also confirmed.

Next, Model 4 was developed to establish whether the type of service makes a difference in the risk of conflict onset. The argument presented in the literature is that armed PMSCs increase the likelihood of conflict onset more than unarmed PMSCs (Hypothesis 4). However, only unarmed services were significant, while all other results were of the results of the CPH model were insignificant. The lack of evidence therefore makes it impossible to assess Hypothesis 4. Accordingly, Hypothesis 4 was not confirmed.

Last, Model 5 was designed to explore Leander’s influential argument that the market for force is self-perpetuating and, as a result, that the influence of PMSCs increases over time.<sup>79</sup> Hypothesis 5 proposed that the uninterrupted presence of PMSCs in a country increases the likelihood of conflict onset. In contrast to the other models, Model 5 employed logistic regression, and its findings suggest that the likelihood of conflict onset was 1.41 greater when PMSCs had long been present than when they were not (Table 4). Figure 8 displays the odds ratios for the individual variables in the model.

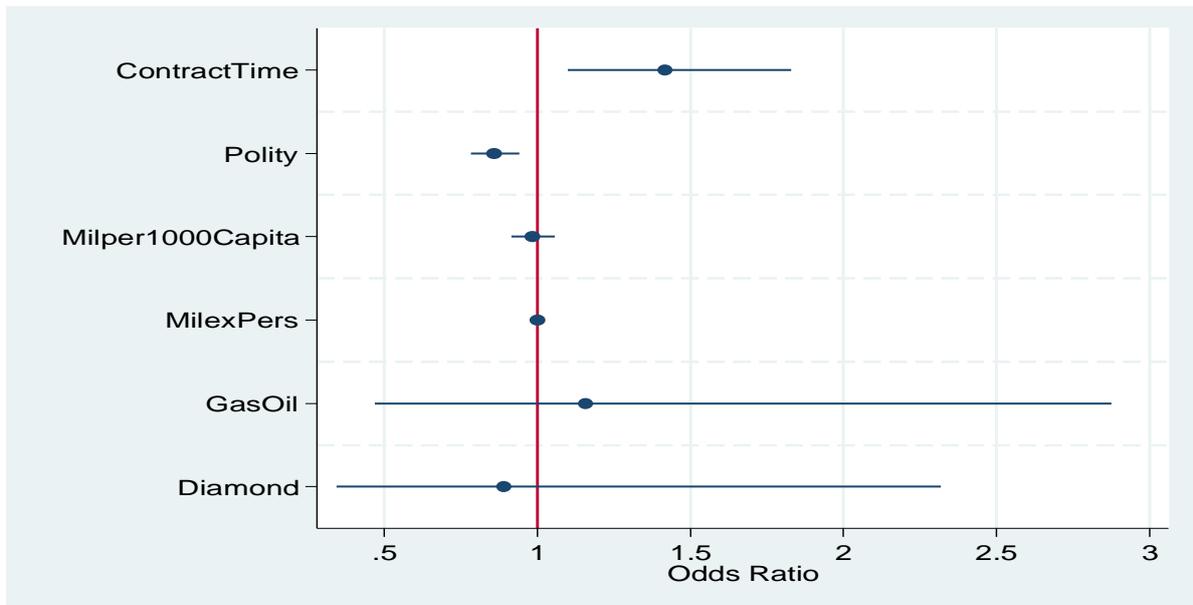


Figure 8: Odds ratios of conflict onset and private military and security companies (PMSCs)

That result supports Leander’s argument (i.e., Hypothesis 5), and an important effect of the duration of PMSCs’ presence on conflict onset can be identified. Apparently, the longer that PMSCs remain available, the more that they can shape their customers’ perspectives on security and threats. Because PMSCs require the existence of threats in order to make profit, they create demand for ways to respond to such threats.<sup>80</sup> As a consequence, clients consider force-based options for crisis management more favourably and frequently, which escalates the likelihood of conflict.

The results also furnish evidence concerning several control variables. First, political regime was examined to gauge whether the availability of democratic channels for conflict resolution negatively affects conflict onset. Findings on that point were significant in all models and suggest that the type of regime marginally reduces the risk and odds of conflict onset, which agrees with some findings in the literature. Whereas some scholars have detected a negative relationship between democracy and civil war, most have identified regime type as being insignificant.<sup>81</sup>

Second, the investigation included variables that captured the ability of a state to wage counterinsurgencies—namely, soldiers per capita and military expenditure per soldier. Regarding the former, the assumption was that in a counterinsurgency campaign with intensive human resources, greater troop density would be beneficial, and accordingly, conflict onset would be more likely when troop density is lower. Regarding the latter, the variable of military spending per soldier was meant to capture military quality to evaluate the argument that higher spending per soldier reduces the likelihood of conflict onset. The variable was insignificant in all models. By contrast, the results for military spending per soldier were marginally significant in one model only (Models 3). However, contrary to expectations, its impact was neither positive nor negative.

Last, the variables concerning the natural resources of gas and oil, on the one hand, and diamonds, on the other, were mostly nonsignificant across all models. When interacted with time, natural resources gained influence; however, instead of increasing the likelihood of conflict onset, they seem to have reduced that risk over time. That dynamic might be explained by the fact that immediately

after the end of the Cold War, every conflict party actively sought alternative sources for funding, and natural resources were the most readily available. However, over time, international regulations and oversight complicated the use of natural resources to fund armed conflicts. In any case, such results are surprising and need to be interpreted with caution. After all, because they are products of logistic regression, the significance of their interaction might have been affected by unmeasured heterogeneity between the groups. If residual variation differed between the groups, then the coefficient might have been significant even though the probabilities for both groups were identical.<sup>82</sup> Since the interactions were introduced as control variables and not crucial for the findings, further interpretation is unwarranted.

#### 4. Conclusion

The purpose of the investigation presented here was to answer a question that has confronted the scholarly community since the growth of the market for force in the 1990s: Whether do PMSCs influence the stability in the international system. i.e. do they affect conflict onset? Several hypotheses were delineated to examine various aspects of that question, and Table 5 summarizes the results of the investigation.

Table 5: Overall results

Hypothesis	Result
Hypothesis 1: The presence of PMSCs increases the likelihood of conflict onset.	Confirmed, substantial effect is slight
Hypothesis 2: The more clients with access to PMSC services, the higher the likelihood of conflict onset.	Confirmed
Hypothesis 3: Government contracts increase the likelihood of conflict onset more than contracts with rebel groups and other types of clients.	Confirmed
Hypothesis 4: the presence of armed PMSCs increases the likelihood of conflict onset more than that of unarmed PMSCs.	Not confirmed
Hypothesis 5: The longer PMSCs are in a country, the higher the likelihood of conflict onset.	Confirmed

First, Hypothesis 1 was formulated to test whether the presence or absence of PMSCs affected the onset of conflict. Although the hypothesis was confirmed and the increase in risk was large, the actual substantial increase in risk was slight (Table 5). Such findings suggest that conflict onset remains an exceptionally rare event, even amid the presence of PMSCs. Second, Hypothesis 2 was also confirmed. The market for force seems to have leveled the playing field by providing multiple actors with access to the means of violence, which in turn has increased the likelihood of the use of force to resolve conflicts. Although that finding could be interpreted as underscoring the necessity of centralization and governments' monopoly on force, the result corresponding to Hypothesis 3—that government contracts are a chief driver of the increased onset of conflict—contradicts that conclusion. More specifically, the market for force not only undercuts the monopoly on force by offering multiple actors access to means of force but also increases the likelihood that the stewards of the monopoly—that is,

governments—employ force. In short, governments seem to increasingly consider PMSCs as a means to counter domestic challengers or to circumvent restrictions on the use of force.

Surprisingly, no evidence was found to suggest that armed PMSCs increase the likelihood of conflict onset (Hypothesis 4). That finding does not allow any conclusions about previous reported results that armed PMSCs are the most controversial and most problematic type of PMSCs, for they are liable to pursue their own interests by force or drag home states into conflicts.<sup>83</sup> Although evidence to support that claim did not surface in the investigation and PMSCs might not use force at their own discretion, they clearly shape clients' perspectives on the use of force. Among other results, the duration of the presence of PMSCs in a country increased the likelihood of conflict onset (Hypothesis 5). That finding underscores Leander's warnings about the self-perpetuating character of the market for force. Even though the effect detected in the data set was moderate, the data and the logic of the argument suggest that the effect will intensify over time. After all, the longer than PMSCs are in a country and providing services, the more that clients will perceive conflicts with a military lens, and the stronger the effect will be. Although whether PMSCs actively encourage clients to use force or whether their advice unintentionally makes clients more prone to resort to military solutions cannot be determined, the lack of such evidence does not detract from the force of the finding.<sup>84</sup>

However, the conclusions need to be treated cautiously as they rest on three limitations. First, the data covers three important world regions – Latin America, Africa, and Southeast Asia – yet it does not include two conflict-ridden regions, i.e. the remainder of Asia and the Middle East. Likewise, developments before 1990 and after 2011 are not within the scope of the investigation. Accordingly, past conflict dynamics in these regions and more recent developments on the market for force are not captured by the dataset, and are not reflected in the analysis. Most importantly, the most recent use of combat providers in international interventions, e.g. Yemen, and interstate rivalries, e.g. the encounter of Russian private operators with US armed forces in Syria, remains outside the scope of that data.<sup>85</sup> A third limitation is that the data may capture contracting behavior imperfectly. The existence of a contract is indicated by the occurrence of a PMSC-related event. By relying on such a measure contracts which do not yield an event remain undetected. While there is certainly room for contracts not being represented, the dataset does not apply specific criteria to identify an event other than it being newsworthy. This casts a wide net and suggest that a large proportion of contracts are being captured by the data gathering process.

To what extent do the results support for the neomedieval argument? As suggested by the neomedieval-order-argument, the access of non-state actors to force and force related services increased instability, i.e. conflict onset. However, the increases in the substantial risk of conflict onset associated with the market for force is small (0.01%). Furthermore, non-state actor contracts do not increase the risk of conflict onset in a noteworthy manner. Government contracts, in contrast, are more strongly associated with an increased risk of conflict onset. While force is traded on a market, contracting for actual war remains rather entrenched with the state. However, there is indication that this may be subject to change over time. The confirmation of Leander's hypotheses of the self-perpetuating nature of the market for force is particularly worrying in this regard.<sup>86</sup> Although the effects of PMSCs on conflict onset have been slight, it stands to reason that the market's influence will become increase in the future. Force and force-related options will become more prominent in the minds of decision makers – be they representative of a state or a non-state actors. Theodore Roosevelt's advice to "Speak softly and carry a big stick" might soon become shortened to just the big

stick. Such a development would make more frequent conflict onset almost inevitable and provides cautious support for the neomedievalist argument.

## Acknowledgement

Bio:

## Endnotes

---

<sup>1</sup> {Cerny, 1998 #2456, 45}{McFate, 2014 #1944}Pattison, *The morality of private war : the challenge of private military and security companies.*, 168-169, Singer, *Corporate warriors: The rise of the privatized military industry.*, 175, Mandel, *Armies without states : the privatization of security.*, 81

<sup>2</sup> {Leander, 2006 #80}

<sup>3</sup> Kinsey, "Problematising the Role of Private Security Companies in Small Wars."

<sup>4</sup> It is important to note that the privatization of force is only one among several elements which need to be present for a neomedieval order. {Berzins, 2003 #2455, 11}

<sup>5</sup> Collier and Hoeffler, "Greed and grievance in civil war.", Fearon and Laitin, "Ethnicity, insurgency, and civil war."

<sup>6</sup> Cunningham et al., "It Takes Two: A Dyadic Analysis of Civil War Duration and Outcome.", 570, Cederman and Gleditsch, "Introduction to Special Issue on "Disaggregating Civil War", "---, 488, Marten, *Warlords : strong-arm brokers in weak states*, Kalyvas and Balcells, "International System and Technologies of Rebellion: How the End of the Cold War Shaped Internal Conflict.", Branovic and Chojnacki, "The logic of security markets: Security governance in failed states.", Lacina, "Periphery versus Periphery: The Stakes of Separatist War.", Seymour et al., "E pluribus unum, ex uno plures: Competition, violence, and fragmentation in ethnopolitical movements."

<sup>7</sup> Shearer, *Private armies and military intervention*, Vines, "Gurkhas and the private security business in Africa.", Sherman and DiDomenico, *The Public Costs of Private Security in Afghanistan*, Percy, "Private Security Companies and Civil Wars.", Faulkner, "Buying Peace? Civil War Peace Duration and Private Military & Security Companies."

<sup>8</sup> Chojnacki et al., *Mercenaries in Civil Wars, 1950-2000*, Musah and Fayemi, "Mercenaries: Africa's Experience 1950-1990.", Branovic, *The Privatisation of Security in Failing States: A Quantitative Assessment.*

<sup>9</sup> Akcinaroglu and Radziszewski, "Private Military Companies, Opportunities, and Termination of Civil Wars in Africa.", Petersohn, "Private Military and Security Companies (PMSCs), Military Effectiveness, and Conflict Severity in Weak States, 1990–2007,"---, ---, "The Impact of Mercenaries and Private Military and Security Companies (PMSCs) on Civil War Severity between 1946 and 2002."

<sup>10</sup> Avant and Neu, "The Private Security Events Database."

<sup>11</sup> {Thomson, 1994 #22}

<sup>12</sup> Avant and Sigelman, "Private Security and Democracy: Lessons from the US in Iraq.", Schooner, "Why Contractor Fatalities Matter.", McFate, *The modern mercenary : private armies and what they mean for world order.*, 55

<sup>13</sup> Bueno de Mesquita and Downs, "Intervention and Democracy.", Fearon, "Domestic Political Audiences and the Escalation of International Disputes.", Richards et al., "Good Times, Bad Times, and the Diversionary Use of Force: A Tale of Some Not-So-Free Agents."

<sup>14</sup> Pattison, *The morality of private war : the challenge of private military and security companies.*, 148

<sup>15</sup> Thomson, *Mercenaries, Pirates, & Sovereigns*, Carmola, *Private security contractors and new wars : risk, law, and ethics.*, 90-98

- <sup>16</sup> Thomson, *Mercenaries, Pirates, & Sovereigns.*, 43, Leander, *Eroding State Authority? Private Military Companies and the Legitimate Use of Force.*
- <sup>17</sup> ---, *Eroding State Authority? Private Military Companies and the Legitimate Use of Force*, Abrahamsen and Williams, *Security beyond the state : private security in international politics.*
- <sup>18</sup> Mandel, *Armies without states : the privatization of security.*, 81
- <sup>19</sup> Avant, "The Implications of Marketized Security for IR Theory: The Democratic Peace, Late State Building, and the Nature Frequency of Conflict."
- <sup>20</sup> Mahoney, "Buyer beware: How Market Structure Affects Contracting and Company Performance in the Private Military Industry.", Spearin, "Privatized Peace? Assessing the interplay between states, humanitarians and private security companies.", 211
- <sup>21</sup> Phelps, "Doppelgangers of the State: Private Security and Transferable Legitimacy."
- <sup>22</sup> Branovic, *The Privatisation of Security in Failing States: A Quantitative Assessment.*, 12
- <sup>23</sup> Kinsey, "Problematising the Role of Private Security Companies in Small Wars."
- <sup>24</sup> Singer, *Can't Win With 'Em, Can't Go to War Without 'Em: Private Military Contractors and Counterinsurgency.*, 4
- <sup>25</sup> Stoddard et al., *The use of private security providers and services in humanitarian operations.*,
- <sup>26</sup> Ostensen, *UN Use of Private Military and Security Companies*, Percy, "The Security Council and the Use of Private Force."
- <sup>27</sup> Mandel, *Armies without states : the privatization of security.*, 81
- <sup>28</sup> Abrahamsen and Williams, *Security beyond the state : private security in international politics.*
- <sup>29</sup> McFate, *The modern mercenary : private armies and what they mean for world order.*, xv
- <sup>30</sup> O'Brian, "Private Military Companies and African Security 1990-1998.", 69
- <sup>31</sup> Abrahamsen and Williams, *Security beyond the state : private security in international politics.*, 155, Pech, "Executive Outcomes - A corporate conquest."
- <sup>32</sup> Musah and Fayemi, "Mercenaries: Africa's Experience 1950-1990.", Leander, "The Market for Force and Public Security: The Destabilizing Consequences of Private Military Companies.", 613-615
- <sup>33</sup> Collier and Hoeffler, "Greed and grievance in civil war.", Akcinaroglu and Radziszewski, "Private Military Companies, Opportunities, and Termination of Civil Wars in Africa."
- <sup>34</sup> Mandel, *Armies without states : the privatization of security.*, 82
- <sup>35</sup> Singer, *Corporate warriors: The rise of the privatized military industry.*, 91
- <sup>36</sup> Branovic, *The Privatisation of Security in Failing States: A Quantitative Assessment.*
- <sup>37</sup> Petersohn, "Private Military and Security Companies (PMSCs), Military Effectiveness, and Conflict Severity in Weak States, 1990–2007."
- <sup>38</sup> Fitzsimmons, *Mercenaries in asymmetric conflicts.*, 23-4
- <sup>39</sup> Singer, *Corporate warriors: The rise of the privatized military industry.*, 95, Stoker, *Military advising and assistance : from mercenaries to privatization, 1815-2007.*
- <sup>40</sup> Palmer, "More Tooth, Less Tail: Contractors in Bosnia."
- <sup>41</sup> Cotton et al., *Hired Guns: The Roles And Implications of Armed Contractors in Operation Iraqi Freedom.*, 45
- <sup>42</sup> Chojnacki et al., *Mercenaries in Civil Wars, 1950-2000.*, 6, Petersohn, "Private Military and Security Companies (PMSCs), Military Effectiveness, and Conflict Severity in Weak States, 1990–2007."
- <sup>43</sup> Leander, "The Market for Force and Public Security: The Destabilizing Consequences of Private Military Companies."
- <sup>44</sup> *Ibid.*, 606 & 618
- <sup>45</sup> (*ibid.*, 618)
- <sup>46</sup> <http://psed.siecenter.du.edu/>; Avant and Neu, "The Private Security Events Database." It is noteworthy, that the dataset does not contain much information on the companies themselves which may influence their behaviour. For instance, it does not contain information about origin of the company, the background of their employees, corporate structure or culture, or the size of the contract.
- <sup>47</sup> Uppsala Conflict Data Program, *UCDP/ PRIO Armed Conflict Dataset Handbook.*
- <sup>48</sup> It is noteworthy that there is a debate about the conceptualization of civil war. Criticism has been raised about data collection, coding rules or the appropriateness of different rather arbitrary numerical thresholds to identify civil war.
- <sup>49</sup> Hegre and Sambanis, "Sensitivity Analysis of Empirical Results on Civil War Onset.", 523, Fearon and Laitin, "Ethnicity, insurgency, and civil war.", 82
- <sup>50</sup> Singer, *Corporate warriors: The rise of the privatized military industry.*
- <sup>51</sup> Lee Ray, "Explaining Interstate Conflict and War: What Should Be Controlled for?.", Achen, "Let's Put Garbage-Can Regressions and Garbage-Can Probits Where They Belong,"---

- 
- <sup>52</sup> Oneal and Russett, "Rule of Three, Let It Be? When More Really Is Better,"---
- <sup>53</sup> Lee Ray, "Explaining Interstate Conflict and War: What Should Be Controlled for?,"---
- <sup>54</sup> Chojnacki et al., *Mercenaries in Civil Wars, 1950-2000*.
- <sup>55</sup> Ross, "How do natural resources influence civil war? Evidence from thirteen cases.", 59
- <sup>56</sup> Lujala, "Valuable natural resources."
- <sup>57</sup> Fearon and Laitin, "Ethnicity, insurgency, and civil war.", 80
- <sup>58</sup> Pickering and Kisangani, "The International Military Intervention Dataset: An Updated Resource for Conflict Scholars  
", Akcinaroglu and Radziszewski, "Private Military Companies, Opportunities, and Termination of Civil Wars in Africa."
- <sup>59</sup> Bennett and Stam, "The Declining Advantages of Democracy,"---
- <sup>60</sup> Thiel, "COIN Manpower Ratios: Debunking the 10 to 1 Ratio and Surges."
- <sup>61</sup> Friedman, "Manpower and Counterinsurgency: Empirical Foundations for Theory and Doctrine.", 572
- <sup>62</sup> <https://data.worldbank.org/indicator/ms.mil.xpnd.gd.zs>
- <sup>63</sup> Hegre, "Democracy and armed conflict.", Lacina, "Explaining the Severity of Civil Wars."
- <sup>64</sup> Hegre et al., "Toward a Democratic Civil Peace? Democracy, Political Change, and Civil War, 1816-1992."
- <sup>65</sup> Vreeland, "The Effect of Political Regime on Civil War: Unpacking Anocracy.", Acemoglu and Robinson, *Economic origins of dictatorship and democracy*.
- <sup>66</sup> Belkin and Schofer "Coups Risk, Counterbalancing, and International Conflict".
- <sup>67</sup> Dunigan and Petersohn, "Markets for Force".
- <sup>68</sup> Hegre and Sambanis, "Sensitivity Analysis of Empirical Results on Civil War Onset.", 515
- <sup>69</sup> Fearon and Laitin, "Ethnicity, insurgency, and civil war.", Mueller, "The Banality of "Ethnic War"."
- <sup>70</sup> Fearon and Laitin, "Ethnicity, insurgency, and civil war.", Duffy Toft, "Population Shifts and Civil War: A Test of Power Transition Theory."
- <sup>71</sup> Fearon and Laitin, "Ethnicity, insurgency, and civil war."
- <sup>72</sup> Ray, "Explaining Interstate Conflict and War: What Should Be Controlled for?."
- <sup>73</sup> Collier and Hoeffler, "Greed and grievance in civil war.", Fearon and Laitin, "Ethnicity, insurgency, and civil war.", Hegre and Sambanis, "Sensitivity Analysis of Empirical Results on Civil War Onset."
- <sup>74</sup> By comparison, the CPH model produces less biased, more reliable results; see Green and Symons, "A comparison of the logistic risk function and the proportional hazards model in prospective epidemiologic studies."
- <sup>75</sup> Box-Steffensmeier et al., "Nonproportional Hazards and Event History Analysis in International Relations.", 34
- <sup>76</sup> Ibid., Balch-Lindsay et al., "Third-Party Intervention and the Civil War Process."
- <sup>77</sup> The logit model was run on uncensored data controlling for ongoing conflict with similar results.
- <sup>78</sup> Please see the appendix for robustness checks. A model lagging the independent variable 'PMSC presence' was calculated in order to deal with potential endogeneity. In the lagged model PMSC presence is still significant and still indicates an increase in the risk of conflict onset. Likewise, additional models including inequality has a control have been calculated. The coefficients indicate that PMSC increase the risk of conflict onset.
- <sup>79</sup> Leander, "The Market for Force and Public Security: The Destabilizing Consequences of Private Military Companies."
- <sup>80</sup> Leander (2005) applies her argument to Africa only, whereas the investigation presented here focused on Southeast Asia and Latin America as well. However, if with data representing Africa only (results not included here), the effect becomes even stronger.
- <sup>81</sup> Fearon and Laitin, "Ethnicity, insurgency, and civil war.", Esty et al., *Working papers state failure task force report*, Hegre and Sambanis, "Sensitivity Analysis of Empirical Results on Civil War Onset."
- <sup>82</sup> I would like to thank xxx for bringing that point to my attention.
- <sup>83</sup> Zarate, "The Emergence of a New Dog of War: Private International Security Companies, International Law, and New World Disorder.", 147
- <sup>84</sup> Leander, "The Market for Force and Public Security: The Destabilizing Consequences of Private Military Companies.", 612
- <sup>85</sup> Gibbons-Neff, *How a 4-Hour Battle Between Russian Mercenaries and U.S. Commandos Unfolded in Syria*, Telesur, *Mexican, Columbian 'Blackwater' Mercenaries Killed in Yemen*.
- <sup>86</sup> Leander, "The Market for Force and Public Security: The Destabilizing Consequences of Private Military Companies."

---

## Bibliography

- Abrahamsen, Rita, and Michael C. Williams. (2011) *Security Beyond the State : Private Security in International Politics*. Cambridge, UK ; New York: Cambridge University Press.
- Acemoglu, Daron, and James A. Robinson. (2006) *Economic Origins of Dictatorship and Democracy*. Cambridge University Press.
- Achen, Christopher H. (2005) Let's Put Garbage-Can Regressions and Garbage-Can Probits Where They Belong. *Conflict Management and Peace Science* 22:327-39.
- Akcinaroglu, Seden, and Elizabeth Radziszewski. (2013) Private Military Companies, Opportunities, and Termination of Civil Wars in Africa. *Journal of Conflict Resolution* 57:795-821.
- Avant, Deborah. (2006) The Implications of Marketized Security for Ir Theory: The Democratic Peace, Late State Building, and the Nature Frequency of Conflict. *Perspectives on Politics* 2:507-28.
- Avant, Deborah, and Kara Kingma Neu. (2019) The Private Security Events Database. *Journal of Conflict Resolution* 0:0022002718824394.
- Avant, Deborah, and Lee Sigelman. (2010) Private Security and Democracy: Lessons from the Us in Iraq. *Security Studies* 19:230-65.
- Balch-Lindsay, Dylan, Andrew J. Enterline, and Kyle A. Joyce. (2008) Third-Party Intervention and the Civil War Process. *Journal of Peace Research* 45:345-63.
- Ballesteros, Enrique. (1994) *Report on the Question of the Use of Mercenaries as a Means of Violating Human Rights and Impeding the Exercise of the Rights of Peoples to Self-Determination*. Geneva United Nations.
- Belkin, Aaron, and Evan Schofer. "Coup Risk, Counterbalancing, and International Conflict." *Security Studies* 14, no. 1 (2005/01/01 2005): 140-77.
- Bennett, Scott D., and Allan C. Stam. (1998) The Declining Advantages of Democracy. *Journal of Conflict Resolution* 42:344-66.
- Box-Steffensmeier, Janet M., Dan Reiter, and Christopher Zorn. (2003) Nonproportional Hazards and Event History Analysis in International Relations. *Journal of Conflict Resolution* 47:33-53.
- Branovic, Zeljko. (2011) *The Privatisation of Security in Failing States: A Quantitative Assessment*. Occasional Paper. Geneva: Geneva Center for Democratic Control of Armed Forces.
- Branovic, Zeljko, and Sven Chojnacki. (2011) The Logic of Security Markets: Security Governance in Failed States. *Security Dialogue* 42:553-69.
- Brooks, Doug. (2000) Write a Cheque, End a War: Using Private Military Companies to End African Conflicts'. *Conflict Trends*:33-35.
- Bueno de Mesquita, Bruce, and George W. Downs. (2006) Intervention and Democracy. *International Organization* 60:627-49.
- Carmola, Kateri. (2010) *Private Security Contractors and New Wars : Risk, Law, and Ethics*. Contemporary Security Studies. London ; New York: Routledge.
- Cederman, Lars-Erik, and Kristian Skrede Gleditsch. (2009) Introduction to Special Issue on "Disaggregating Civil War". *Journal of Conflict Resolution* 53:487-95.
- Chojnacki, Sven, Nils Metternich, and Johannes Munster. (2009) *Mercenaries in Civil Wars, 1950-2000*. Discussion Paper Sp li 2009-05. Berlin: Wissenschaftszentrum Berlin.
- Cleary, Sean (2002) Angola – a Case Study of Private Military Involvement. In *Peace, Profit and Plunder*, edited by Jakkie Cilliers and Peggy Mason, pp. 141-74. Cape Town: Insitute for Security Studies.
- Collier, P., and A. Hoeffler. (2004) Greed and Grievance in Civil War. *Oxford Economic Papers-New Series* 56:563-95.
- Collier, P., A. Hoeffler, and D. Rohner. (2009) Beyond Greed and Grievance: Feasibility and Civil War. *Oxford Economic Papers-New Series* 61:1-27.

- 
- Cotton, Sarah K., Ulrich Petersohn, Molly Dunigan, Q Burkhart, Megan Zander-Cotugno, Edward O'Connell, and Michael Webber. (2010) *Hired Guns: The Roles and Implications of Armed Contractors in Operation Iraqi Freedom*. Santa Monica and Arlington: RAND Corporation.
- Cunningham, D. E., K. S. Gleditsch, and I. Salehyan. (2009) It Takes Two: A Dyadic Analysis of Civil War Duration and Outcome. *Journal of Conflict Resolution* 53:570-97.
- Donald, Dominick. (2006) *After the Bubble. British Private Security Companies after Iraq*. Whitehall Paper 66. London: Royal United Services Institute.
- Duffy Toft, Monica. (2007) Population Shifts and Civil War: A Test of Power Transition Theory. *International Interactions* 33:243-69.
- Dunigan, Molly, and Ulrich Petersohn (2015): *Markets for Force*, Philadelphia: University of Pennsylvania Press.
- Esty, Daniel C, Jack A. Goldstone, Ted Robert Gurr, Pamela T. Surko, and Alan N. 1995. Unger. (1995) *Working Papers State Failure Task Force Report*. McLean, VA: : State Failure Project.
- Faulkner, Christopher M. (2019) Buying Peace? Civil War Peace Duration and Private Military & Security Companies. *Civil Wars* 21:83-103.
- Fearon, J. D., and D. D. Laitin. (2003) Ethnicity, Insurgency, and Civil War. *American Political Science Review* 97:75-90.
- Fearon, James D. (1994) Domestic Political Audiences and the Escalation of International Disputes. *The American Political Science Review* 88:577-92.
- Fitzsimmons, Scott. (2013) *Mercenaries in Asymmetric Conflicts*. Cambridge ; New York: Cambridge University Press.
- Friedman, Jeffrey A. (2011) Manpower and Counterinsurgency: Empirical Foundations for Theory and Doctrine. *Security Studies* 20:556-91.
- Gibbons-Neff, Thomas. May 24, 2018 How a 4-Hour Battle between Russian Mercenaries and U.S. Commandos Unfolded in Syria. New York Time.
- Hegre, Håvard. (2014) Democracy and Armed Conflict. *Journal of Peace Research* 51:159-72.
- Hegre, Havard, Tanja Ellingsen, Scott Gates, and Nils Petter Gleditsch. (2001) Toward a Democratic Civil Peace? Democracy, Political Change, and Civil War, 1816-1992. *The American Political Science Review* 95:33-48.
- Hegre, Havard, and Clionadh Raleigh. (2006) Population Size, Concentration and Civil War. A Geographically Disaggregated Analysis. In *Environmental Factors in Civil War Working Group*. Oslo: PRIO.
- Hegre, Håvard, and Nicholas Sambanis. (2006) Sensitivity Analysis of Empirical Results on Civil War Onset. *The Journal of Conflict Resolution* 50:508-35.
- Howe, Herbert M. (1998) Private Security Forces and African Stability: The Case of Executive Outcomes. *The Journal of Modern African Studies* 36:307-31.
- Kalyvas, Stathis N., and Laia Balcells. (2010) International System and Technologies of Rebellion: How the End of the Cold War Shaped Internal Conflict. *The American Political Science Review* 104:415-29.
- Kinsey, Christopher. (2007) Problematizing the Role of Private Security Companies in Small Wars. *Small Wars & Insurgencies* 18:584-614.
- Lacina, Bethany. (2006) Explaining the Severity of Civil Wars. *Journal of Conflict Resolution* 50:276-89.
- . (2015) Periphery Versus Periphery: The Stakes of Separatist War. *The Journal of Politics* 77:692-706.
- Leander, Anna. (2006) Eroding State Authority? Private Military Companies and the Legitimate Use of Force. Centro Militaire di Studi Strategici: Rome.
- . (2005) The Market for Force and Public Security: The Destabilizing Consequences of Private Military Companies. *Journal of Peace Research* 42:605-22.
- Lujala, Paivi. (2014) Valuable Natural Resources. In *Routledge Handbook of Civil War*, edited by Edward Newman and Karl DeRouen, pp. 119-30. New York: Routledge.

- 
- Mahoney, Charles. (2017) Buyer Beware: How Market Structure Affects Contracting and Company Performance in the Private Military Industry. *Security Studies* 26:30-39.
- Mandel, Robert. (2002) *Armies without States : The Privatization of Security*. Boulder, Colo.: Lynne Rienner.
- Marten, Kimberly Zisk. (2012) *Warlords : Strong-Arm Brokers in Weak States*. Ithaca, N.Y.: Cornell University Press.
- McFate, Sean. (2014) *The Modern Mercenary : Private Armies and What They Mean for World Order*. Oxford: Oxford University Press.
- Mueller, John. (2000) The Banality of "Ethnic War". *International Security* 25:42-70.
- Musah, Abdel-Fatau, and J. Kayode Fayemi. (2000) Mercenaries: Africa's Experience 1950-1990. In *Mercenaries an African Security Dilemma*, edited by Abdel-Fatau Musah and J. Kayode Fayemi, pp. 265-74. London: Pluto Press.
- O'Brian, Kevin. (2000) Pmcs, Myths and Mercenaries: The Debate on Private Military Companies. *RUSI-Journal* 145:59-64.
- . (2000) Private Military Companies and African Security 1990-1998. In *Mercenaries an African Security Dilemma*, edited by Abdel-Fatau Musah and J. Kayode Fayemi, pp. 43-75. London: Pluto Press.
- Oneal, John R., and Bruce Russett. (2005) Rule of Three, Let It Be? When More Really Is Better. *Conflict Management and Peace Science* 22:293-310.
- Ostensen, Ase. (2011) *Un Use of Private Military and Security Companies*. Security Sector Reform Paper 3. Geneva: Geneva Centre for the Democratic Control of Armed Forces.
- Palmer, Herman T. (1999) More Tooth, Less Tail: Contractors in Bosnia. *Army Logistical* September-October:6-9.
- Pattison, James. (2014) *The Morality of Private War : The Challenge of Private Military and Security Companies*. First edition. ed. Oxford: Oxford University Press.
- Pech, Khareen. (1999) Executive Outcomes - a Corporate Conquest. In *Peace, Profit or Plunder*, edited by Jakkie Cilliers and Peggy Mason, pp. 81-110. Pretoria: Institute for Security Studies.
- Percy, Sarah. (2009) Private Security Companies and Civil Wars. *Civil War* 11:57-74.
- . (2008) The Security Council and the Use of Private Force. In *The United Nations Security Council and War*, edited by Vaughn Lowe, Adam Roberts, Jennifer Welsh and Dominik Zaum, pp. 624-40. Oxford: Oxford University Press.
- Petersohn, Ulrich. (2014) The Impact of Mercenaries and Private Military and Security Companies (Pmcs) on Civil War Severity between 1946 and 2002. *International Interactions* 40:191-215.
- . (2017) Private Military and Security Companies (Pmcs), Military Effectiveness, and Conflict Severity in Weak States, 1990–2007. *Journal of Conflict Resolution* 61: 1046-72.
- Phelps, Martha Elizabeth. (2014) Doppelgangers of the State: Private Security and Transferable Legitimacy. *Politics & Policy* 42:824-49.
- Pickering, Jeffrey , and Emizet F. Kisangani. (2009) The International Military Intervention Dataset: An Updated Resource for Conflict Scholars *Journal of Peace Research* 46:589-99.
- Ray, James. (2003) Explaining Interstate Conflict and War: What Should Be Controlled For? *Conflict Management and Peace Science* 20:1-31.
- Richards, Diana, T. Clifton Morgan, Rick K. Wilson, Valerie L. Schwebach, and Garry D. Young. (1993) Good Times, Bad Times, and the Diversionary Use of Force: A Tale of Some Not-So-Free Agents. *The Journal of Conflict Resolution* 37:504-35.
- Ross, M. L. (2004) How Do Natural Resources Influence Civil War? Evidence from Thirteen Cases. *International Organization* 58:35-67.
- Sapone, Montgomery. (1999) Have Rifle with Scope, Will Travel: The Global Economy of Mercenary Violence. *California Western International Law Journal* 30:1-43.
- Schooner, Steven. (2008) Why Contractor Fatalities Matter. *Paramenters*:78-91.

- Seymour, Lee J. M., Kristin M. Bakke, and Kathleen Gallagher Cunningham. (2015) E Pluribus Unum, Ex Uno Plures: Competition, Violence, and Fragmentation in Ethnopolitical Movements. *Journal of Peace Research* 53:3-18.
- Shearer, David. (1998) *Private Armies and Military Intervention*. Adelphi Paper,. Oxford and New York: Oxford University Press for the International Institute for Strategic Studies.
- Sherman, Jake, and Victoria DiDomenico. (2009) *The Public Costs of Private Security in Afghanistan*. Briefing Paper. New York: Center on International Cooperation, New York Univeristy.
- Singer, Peter W. (2007) Can't Win with 'Em, Can't Go to War without 'Em: Private Military Contractors and Counterinsurgency. In *Policy Paper*. Washington, D.C.: The Brookings Institution.
- . (2003) *Corporate Warriors: The Rise of the Privatized Military Industry*. Cornell Studies in Security Affairs. Ithaca: Cornell University Press.
- Spearin, Christopher. (2008) Privatized Peace? Assessing the Interplay between States, Humanitarians and Private Security Companies. In *Private Military and Security Companies. Ethics, Policies and Civil-Military Relations*, edited by Andrew Alexandra, Deane-Peter Baker and Marina Caparini, pp. 203-16. London and New York: Routledge.
- Stoddard, Abby, Adele Harmer, and Victoria DiDomenico. (2008) *The Use of Private Security Providers and Services in Humanitarian Operations*. Hpg Report 27. London: Overseas Development Institute.
- Stoker, Donald J. (2008) *Military Advising and Assistance : From Mercenaries to Privatization, 1815-2007*. Cass Military Studies. New York, NY: Routledge.
- Telesur. (2015) Mexican, Columbian 'Blackwater' Mercenaries Killed in Yemen. Telesur.
- Thiel, Joshua. (2011) Coin Manpower Ratios: Debunking the 10 to 1 Ratio and Surges. *Small Wars & Journal*.
- Thomson, Janice. (1994) *Mercenaries, Pirates, & Sovereigns*. Princeton: Princeton University Press.
- Uppsala Conflict Data Program. (2012) *Ucdp/ Prio Armed Conflict Dataset Handbook*. Oslo: Centre for the Study of Civil Wars, International Peace Research Institute.
- Vines, Alex. (2002) Gurkhas and the Private Security Business in Africa. In *Peace, Profit or Plunder*, edited by Jakkie Cilliers and Peggy Mason, pp. 123-40. Cape Town: Institute for Security Studies.
- Vreeland, James Raymond. (2008) The Effect of Political Regime on Civil War:Unpacking Anocracy. *Journal of Conflict Resolution* 52:401-25.
- Zarate, Juan Carlos. (1998) The Emergence of a New Dog of War: Private International Security Companies, International Law, and New World Disorder. *Stanford Journal of International Law* 34:75-162.

## Appendix

### Lagged model

	Lagged Model 1 (CPH)
lagPMSC	4.291** (2.684)
Political Regime	0.89***

	(0.03)
<b>Military Personnel/ 1,000 Capita</b>	1.002 (0.313)
<b>Military Expenditure/ Soldier</b>	1.000 (1.000)
<b>GasOil</b>	7.849^ (8.59)
<b>GasOil x InTime</b>	0.373** (0.158)
<b>Diamonds</b>	3.741 (4.119)
<b>Diamonds x InTime</b>	0.45^ (0.216)

^p > .1 \*p < .05; \*\*p < .01; \*\*\*p < .001

### Inequality model

Inequality is often argued to be a major variable in explaining conflict onset. Accordingly, a model adding inequality as a control was calculated. The inequality measure is based on the World Bank inequality data. Since multiple country years missed inequality scores, means imputation was employed wherever possible. The overall tendency of the coefficients remains the same as in the model without inequality. Inequality coefficients remains insignificant. Overall the model fit is not improved as AIC/BIC scores are lower in the models without inequality.

	CPH model				LR model
	Model 1	Model 2	Model 3	Model 4	Model 5
<b>PMSC Presence</b>	2.699^ (1.485)				
<b>Number of Clients</b>		1.781 (1.849)			
<b>Number of Clients x InTime</b>		0.875 (0.214)			
<b>Government</b>			24.29** (36.69)		
<b>Government x InTime</b>			0.545 (0.314)		
<b>Rebel</b>			1.496 (1.517)		
<b>Other Client</b>			62.21*** (55.487)		
<b>Other Client x InTime</b>			0.19*** (0.073)		
<b>PMSCarmed</b>				3.0 (2.173)	
<b>PMSCunarmed</b>				1.218 (2.022)	

<b>PMSCunarmed x lnTime</b>				2.414 (1.702)	
<b>PMSC Period</b>					2.032*** (0.333)
<b>Political Regime</b>	0.872*** (0.043)	0.95^ (0.048)	0.885** (0.045)	0.917^ (0.045)	0.72** (0.091)
<b>Inequality (Gini)</b>	0.958 (0.061)	0.95 (0.064)	0.941 (0.063)	0.94 (0.062)	1.074 (0.091)
<b>Military Personnel/ 1,000 Capita</b>	1.109 (0.156)	1.276 (0.163)	1.078 (0.062)	1.184 (0.152)	1.008 (0.092)
<b>Military Expenditure/ Soldier</b>	1.000 (0.000)	1.000 (0.000)	1.000 (0.000)	1.000 (0.000)	1.000 (0.000)

^p > .1 \*p < .05; \*\*p < .01; \*\*\*p < .001