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Potential Negative Externalities of Private Military Entrepreneurs from an Economic Perspective

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ABSTRACT

Private military companies (PMC) can have considerable advantages for the customer on the one hand, but on the other hand can come with great dangers. Based on the theory of externalities, an attempt is made to illuminate this situation and to analyze the negative externalities associated with it. By using an instrumental case study method we can identify two potential negative technological externalities of hiring PMCs which should be internalized. These two are the violation of national law and international humanitarian law in the theater of operation, and the lack of control of the executive by the legislative branch in the exporting state. Based on this, we present and discuss options to eliminate these negative technological externalities. It can be shown that the preferable set of measures includes instruments to create transparency, and command-and-control regulations on the individual state's level. While the second effect can easily be solved with domestic instruments, a supranational organization is needed to solve the first effect.

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Introduction

The appearance of private military entrepreneurs is by no means a new phenomenon, but occurred already in ancient times (Dunigan 2015, 230). While this phenomenon largely disappeared in Europe after the French Revolution, it has enjoyed a renaissance since the 1990s due to different reasons (Singer 2003, 49-70; Avant 2005, 30-38; McFate 2015, 41-49). The total volume of the market for private and security services in 2021 is estimated to be around US-\$ 242 billion (Vantage Market Research 2022).

The importance of these private military entrepreneurs has also initiated considerable scholarly exploration. For example, a search conducted on 19 June 2022 with ProQuest and limited to articles in scientific journals returned over 66,000 hits with the query „private' AND ,military' AND ,company'“. Essentially, political science and legal aspects are addressed in the research. These include, for example, questions of the regulation of these service providers (e.g. Prem 2021), the effects of these companies on domestic or international political processes (e.g. Avant 2005; Leander 2005; Krahmann 2010). From a legal point of view, in addition to regulatory issues, aspects such as the legal classification of these service providers in international humanitarian law are analyzed (e.g. Doswald-Beck 2007; Eckert 2016).

Numerous scholars also use the economic toolkit to study the phenomenon of private military entrepreneurs in more detail. While some studies analyze the constitution of the private market for force (e.g. Dunigan and Petersohn 2015; Petersohn 2021), other scholars deal with the question of

privatization resp. outsourcing of military services (e.g. Fredland and Kendry 1999; Markusen 2003; Fredland 2004; Mahoney 2017). Besides that, economic research in this area has focused in particular on the relationship between private military providers and their clients (e.g. Singer 2003; Cockayne 2007; Fahn and Hadjer 2015; Akcinaroglu and Radziszewski 2020; Tkach 2020a, 2020b). For this purpose, the toolbox of institutional economics and in particular agency theory is used regularly. These theoretical approaches are also applied when analyzing the relationship between the private military company and its military workforce (e.g. Petersohn 2017). Finally, researchers use new public management approaches to shed light on the relationship between clients and military service providers (e.g. Ortiz 2010).

However, what is missing so far, is an analysis of the effects of hiring private military service providers on the base of a subarea of welfare economics, namely the theory of external effects.

Starting from the perspective of a contract between a client and a private military entrepreneur, hiring private military providers results in considerable side effects on uninvolved third parties. These side effects include, e.g. changes in intrastate power tectonics as well as damage to civilians in the theater of operations. Besides that, side effects also occur in the balance of power between states. The theory of external effects is a powerful tool to analyze whether these side effects are negative external effects and should be eliminated. The theory also makes it possible to develop effective and made-to-measure solutions.

Therefore, the purpose of this paper is to close this research gap and, based on the theory of external effects, to analyze the negative effects of hiring private military service providers on uninvolved third parties and to discuss options to internalize these external effects. For this objective, we use an instrumental case study approach to examine the negative externalities more precisely in practice and to compare the gained insights with the relevant theory and, if necessary, to refine the theory.

Although the following considerations refer to a larger part to private military providers, we want to focus primarily on so-called private military companies (PMCs) (McFate 2015).¹ PMCs offer a wide range of military services, both nationally and internationally, with the intention of making a profit, to a wide variety of clientele for a fee. The provided services include military services, primarily at the tactical level on the front line of the battlefield, or consulting and training services aimed at improving the quality of the client's military.

The paper is structured as follows: First, we present our methodology in the second section. In the third section, we describe the relevant theory. In the fourth section, we apply the relevant theory to the phenomenon of contracting PMCs, which is deepened by case studies. Based on this we offer possible solutions how to internalize the negative external effects (section 5) and discuss the limitations of this research approach (section 6). Finally we draw conclusions in section 7.

Methodology

The research objective is characterized by the fact that the discussed phenomena rarely occur. In addition, several factors that influence each other always play a central role in these phenomena. Furthermore, the setting does not allow an experimental design to be implemented.

Therefore, to approach our topic empirically, it makes sense to use a case study research (Stake 1995; Merriam 2015; Yin 2018). Since the relevant theory is well developed and corresponding connections can be extracted from the literature, at least to some extent, we choose an instrumental case study method (Stake 1995). The instrumental case study method succeeds in gaining insight into a specific problem and in refining the underlying theory. The case is of secondary interest. Rather, it should only play a supporting role and it should improve the understanding of the relevant links between the decisive factors.

If no corresponding cases could be identified for some of the phenomena known from the theory or if such cases were documented insufficiently in terms of quality, no case was presented.

Regarding the insights of Stake (1995) and Yin (2018), we choose the following research process: In the first step, we identify the specific research question. In the second step, we derive the relevant connections and characteristics from the theory. In order to extract the different phenomena identified as negative externalities, we conducted a literature review. In this context, we have chosen the (potential) contract between a client and a PMC as a starting point. All non-contractual partners therefore have the status of uninvolved third parties. In this context, we reviewed the relevant literature on private military and security companies and analyzed them with a particular focus on the following questions: (1) Which side effects occur on uninvolved third parties and (2) which of these effects are given particular weight.

In the third step, we select and describe the cases based on the relevant characteristics. In the fourth step, we compare the theory with the cases described and refine the theory accordingly. The fourth step in particular will be about gaining additional insights for suitable measures to internalize the externalities identified.

Since most of the relevant cases are well documented in publicly accessible sources and the sources that had to be accessed can be classified as reliable and of high quality, neither interviews nor other forms of primary data collection were used to describe and analyze the cases. On the one hand, descriptions of the cases in articles in peer-reviewed journals served as sources. On the other hand, reports written by members of well-known research centers and think tanks were also used.

Theoretical Background: The Theory of Externalities

As explained in the previous section, the present analysis follows a four-step procedure. The specific research question (Step 1) is: What kind of side effects on third parties occur by hiring PMCs? Are these negative externalities? And if so, which of these externalities should be internalized and what instruments are appropriate to internalize these externalities? Based on this question, the theoretical background is worked out in this section and adapted on PMCs in the next section (Step 2).

Based on the characteristics of the phenomenon of competition, we define and classify externalities in this section. Besides that, we will show that certain externalities are unproblematic for competition, while others impede the functioning of competition. Based on these findings, we will present possible solutions for internalizing the unwanted externalities.

Competition can be viewed as a dynamic process in which suppliers compete for the favor of consumers. In this context all involved entities use dispersed knowledge (Hayek 1945, 1978). In this way competition is characterized by trial and error processes. Individual providers can gain an advantage over their competitors through advancing actions, e.g. in the form of innovations, if they meet the taste of the consumer better than their competitors. The latter will react to this with imitations or their own innovations. This gives the competition a dynamic character – it is a process of discovery (Hayek 1978).

What is more, is that competition is a ubiquitous phenomenon and can take place at different levels. This means that both individuals and companies or even other entities such as states can compete with one another. Competition has a bundle of characteristics, the most important of which are the allocation function – the resources are channeled into efficient use –, the distribution function – the extent of returns depends largely on one's own performance – and the progress function – competition initiates innovations and thus a constant development (Smith 1887).

A functioning competition presupposes the existence of property rights. The term property rights describes a bundle of rights of an individual to an economic good or a resource (Alchian 1965; Furubotn and Pejovich 1972; Demsetz 1988) which consists of four types of rights. Besides the right to use the resource (*ius usus*) it is the right to exploit the returns of the resource (*ius usus fructus*) and the right to change the substance, the form and so on of the resource (*ius abusus*). Finally the property rights include the right to transfer some or all of the aforementioned rights to others (*ius successionis* or *ius abtuenti*).

Externalities can affect how competition works in a negative way. In a comprehensive understanding, externalities are the effects of the actions of market participants on third parties who are not involved in the transaction.

In this context it is important to emphasize that this third party is an independent entity. The relevant property rights of this third party are not owned by either of the two contracting partners that trigger this supposed external effect.

A distinction can be made between positive and negative externalities (Scitovsky 1954). While the first consists in additional benefits for third parties not involved in the transaction, negative externalities impose additional costs on uninvolved third parties. To place this in the context of PMCs, a negative externality arises in the form that a ruthless PMC which was contracted by a foreign state destroys the property of citizens in the theater of operations. Otherwise hiring PMCs by one state can also result in a positive externality for the citizens of this state who are not pressed into military service anymore.

A further distinction can be made between pecuniary and technological externalities (Viner 1931). Pecuniary externalities are characterized by the fact that the transactions of individual market participants have an impact on market prices and thus in turn positively or negatively change the position of other market participants (Holcombe and Sobel 2001). Pecuniary external effects are a phenomenon inherent of competition and precisely the result of the adjustment to changed relevant conditions market. Therefore, in the case of pecuniary externalities, there is no need for government action. In the case of PMCs, a typical pecuniary externality would arise if one client hires several PMCs, the prices of other PMCs' services would increase.

Technological external effects or externalities are effects on third parties that are not compensated through the price system (Pigou 1924). In this way, the technological external effects are not included in the decision-maker's cost-benefit calculations and result in consumption that is either too low (in the case of external benefits) or too high (in the case of external costs) from a welfare economics point of view. Thus, from the perspective of welfare economics, the technological external effects result in a so-called market failure. From a dynamic view of competition, such as that chosen above, the crucial issue of technological externalities is that they impede the functioning of competition.

Since we have shown above that competition is a ubiquitous phenomenon and since we want to consider competition at different levels, we will use a very broad understanding of the term 'technological externality'. In our terminology, technological externalities are – based on Boudreaux and Meiners (2019, 23) – „an unbargained for ‚third-party‘ effect. That is, it is a ‚spillover‘ effect that arises whenever an actor fails to take account of the cost or the benefit that an instance of her action has on a third party.“ In our understanding technological externalities are not limited to those that occur in competition on classic markets, but also include those that occur in the political or social sphere. In other words, in our understanding, technological externalities are effects on third parties in a competition between different entities at different levels, which are not offset by the compensation mechanism typical of the competition in question and therefore affect the competition. Therefore, it seems necessary that technological externalities arising in a competition should be eliminated.

In this context, a typical technological externality associated with hiring PMCs would be, e.g. the circumvention of legislative power by the executive branch.

Technological externalities that occur can be internalized by taxing (in the case of negative externalities) – the so-called Pigovian tax – or by subsidizing the producers (in the case of positive externalities) (Bator 1958). A Pigovian tax would make the consumption of the good in question more expensive and thus reduce demand to the desired level. A subsidy, on the other hand, would reduce the price of the good in question and thus increase the demand for that good. In the context of PMCs, a Pigovian tax would consist of levying e.g. a value added tax on the price that the PMC charges its clients. The effect would be a price increase. In this context, a subsidy could be designed in such a way that the client is reimbursed for a share of the costs that he spends on PMCs.

However, internalization can also take place in the form of a Coasean bargaining, which, however, requires the existence of corresponding property rights and low transaction costs (Coase 1960). For example, if a textile manufacturer pollutes the water of a river and this causes the fish in the river to die, the fisherman who catches his fish in the river suffers a disadvantage. The fisherman can offer the textile manufacturer a financial compensation so that the textile manufacturer can install appropriate filters and thus eliminate the water pollution. Transferred to our context, this could mean that a PMC that destroyed the property of citizens in the theater of operations pays a certain amount to the citizens so that they are compensated for their losses.

State regulations (command-and-control regulation) can be used as a further instrument to reduce or completely prevent negative externalities. They can range from setting thresholds to banning the corresponding activity (Berck 2018). An example of a typical command and control regulation would be the ban on producing cars with combustion engines or the obligation to use only electric motors as a drive method. Another example of such a regulation is a threshold for the emitted pollutants. A relevant example in the context of PMCs would be a ban on PMCs or the regulation that only PMCs that meet certain standards can be hired.

A cap-and-trade approach can also be used to reduce the negative external effects (Crocker 1966; Dales 1968; Montgomery 1972). With this instrument, a certain number of certificates are issued by the state or another authority. These certificates certify the right to cause externalities of a certain amount. Since the certificates are tradable, this creates a market for the relevant negative externality, which can be reduced by diminishing the number of certificates. In the context of PMCs, this would mean that every provider of PMC services must have a corresponding certificate. This sets the total amount in this market for private military services. It can be reduced by buying up the certificates.

Two questions arise in connection with the internalization of externalities, namely 1) which negative technological externalities should be internalized and 2) which extent have these effects. It is apparent that the model of welfare economics (Pareto 1909; Lerner 1944; Arrow 1951a; Arrow 1951b) with perfect markets and thus the absence of market failures does not correspond to reality. The chosen understanding of competition as a discovery process suggests internalizing negative technological externalities when they severely disrupt competition. This decision is largely based on normative considerations. Furthermore, an efficient economic policy would require measuring the extent of the externality to be internalized, which in reality is likely to encounter considerable difficulties. Besides that the intervention itself causes considerable costs, some of which might be higher than the distortions resulting from the externality. Therefore, priority should be given to the incremental approach of Popper (1965) (piecemeal engineering), which requires that the main and side effects of an intervention have to be constantly examined and in case of an undesired outcome, the intervention has to be modified or even discontinued if necessary.

Negative Externalities by Hiring PMCs

In this section, the theory of externalities is applied to PMCs, which is part of the second step of the research design. In addition, adequate cases are identified and described for the individual identified externalities (Step 3). Finally, the cases are analyzed and the knowledge gained is compared with the underlying theory, which should also be used to improve this theory (Step 4). In this context it is important to note that case studies were not used for the analysis of all potential externalities. In particular, case studies were not necessarily presented for phenomena that turned out to be no externality or a pecuniary externality. The case studies were selected according to the following criteria: (1) The case is suitable for a comprehensive analysis of the phenomenon to be explained. (2) The case is adequately documented in a qualitatively appropriate and trustworthy manner.

A review of the relevant literature was conducted to identify the supposed key negative externalities that could occur when contracting PMCs. A total of eight issues could be identified that have the characteristics of externalities. It should be emphasized that these are potential externalities that do not necessarily have to occur. Depending on an ontological categorization, the levels individual

(resp. civilians in the theater of operation), state internal entities and states can be distinguished. We use these levels to systematize the different externalities.

In connection with a potential internalization of occurring externalities, it is also important – as we have seen in the section before – to identify 1) the kind of externality, 2) whether relevant property rights have been sufficiently specified, and 3) whether a violation of specified property rights can be punished or which circumstances are responsible that compliance with the property rights can be circumvented from an economic perspective.

Externalities on the Individual Level: Damage to Civilians and Their Property in the Theater of Operations

The use of PMCs is often associated with damage to civilians and their property in the theater of operations: There is a risk that PMCs will disregard the norms of international humanitarian law, national criminal law or national private law when fulfilling their task, since these norms either prove to be an obstacle to the fulfillment of the objective, lead to higher costs or compliance with these norms is not given priority in the contract (Zedek 2007). In addition, PMCs and their employees can violate especially national laws by smuggling, looting, human trafficking or the organization of prostitution (Fredland 2004; Mitchell 2004; Butler, Gluch, and Mitchell 2007; Salehyan, Siroky and Wood 2014; McFate 2019; Ramirez and Wood 2019). The extortion of ransom money for prisoners should also be mentioned here (Fredland 2004). Overall, empirical evidence shows that the use of PMCs has an impact on the extent of violence (Singer 2007, 6; Petersohn 2014).

We want to illustrate and analyze this form of externality using the following case: The Nisour Square Incident occurred on 16 September 2007. Members of the PMC Blackwater, contracted to U.S. forces, killed 17 Iraqi civilians and injured 24 (Tiefer 2009; Whitten 2012; Snukal and Gilbert 2015). The starting point of the event was the detonation of a car bomb near the Izdihar compound, where a meeting between US and Iraqi officials was taking place, around noon on 16 September 2007. A 19 men strong Blackwater Tactical Support Team (TST) then moved into position at Nisour Square to secure the evacuation route for the US officials. To this end, the Blackwater Tactical Operations Center ordered the commander of the TST, Jimmy Watson, to lock down the traffic circle at Nisour Square. In response to an oncoming car, the team opened fire, killing 17 civilians and injuring 20.

Although at first it looked like the PMC and its members would not be held accountable due to unclear competences of the courts and the applicable legal norms (Whitten 2012), they finally were after a longer while. The relatives of those civilians killed during the incident received compensation payments of up to \$20,000 each from the PMC (Snukal and Gilbert 2015). Iraqi authorities, on the other hand, had demanded compensation payments of US-\$ 8 million for each victim. Furthermore, after a long time, five members of this TST were brought to justice in the US. Three of them were convicted of manslaughter and one of murder by a federal court in Washington in 2014. The charges against one of the defendants were dropped. In the outgoing Trump administration, the four convicts were pardoned in 2020 (Trump Grants Clemency 2021).

In this case, there is a typical unbargained for ‘third-party’ effect. The actions of the Blackwater’s members create an externality to bystander civilians, some of whom die and some are injured. Likewise, there is no competition in the sense described above. Therefore, this externality is a technological externality. The relevant property rights, i.e. the integrity of the body or property of the population in the operational area, are sufficiently specified on the one hand by local law and on the other by international humanitarian law. In the case under consideration, this is made clear by the fact that the relatives of the victims receive compensation and those responsible are prosecuted at the end.

However, the transaction costs for the injured parties are very high, so that identification of the damage and prosecution are very difficult. The reasons for this situation are basically as follows:

- (1) There is an incentive for some clients to contract downscale firms because they are interested in a 'silent' and covert military service. Downscale firms are characterized by the fact that they do not adhere to the requirements of self-regulation, work in a non-transparent manner and, in case of doubt, are willing to break national and international norms if this is necessary for the fulfillment of the task (Schneiker 2008).
- (2) Since some clients fear a reputational risk effect,² e.g. in the form of negative media coverage, they will react very cautiously or even obstructively to the disclosure and punishment of such damage to civilians and their property.
- (3) As noted above, when it comes to damage to civilians and their property, there is often a grey area as to which authority should investigate, enforce the payment of compensation and punish the perpetrators (Cameron 2006; Cameron and Chetail 2013; Tougas 2022). PMCs are often deployed in weak states that are hardly able to uncover and prosecute such events. In addition, the export country of the PMCs is often confronted with the dilemma that, on the one hand, investigations and criminal prosecutions have to take place on foreign national territory, which makes them considerably more difficult. On the other hand, such measures in turn constitute encroachments on the sovereignty of the host country (Singer 2006; Schneiker 2008).

This means that multiple agents are involved at all levels of investigation and law enforcement, which increases considerably transaction costs. The Nisour Square Incident showed that it was initially unclear whether the PMC and its members would actually be held accountable and the injured parties would get an adequate compensation.

Thus, it is evident that a negative technological external effect can occur at the level of the individuals in the theater of operation, which makes internalization seem advisable.

Potential Negative Externalities in National Power Tectonics

The relevant literature contains various state-level issues that are caused by hiring PMCs and which could be identified as negative externalities. PMCs alter the national power tectonics in both, the exporting and the importing (host) state. In the exporting state, the following three externalities are of major importance:

First, the existence of this market expands the possibilities of the executive, reduces transparency of military interventions and makes it more difficult for the legislature to control the executive, especially in the field of foreign policy (Avant 2005, 59-60; Barnes 2013; Godfrey et al. 2014; Taylor 2015). According to Fredland (2004) and Avant (2005), the private sector is gaining more influence on geo-political decisions, which in turn is likely to lead to more risky politics.

We want to analyze this phenomenon using Plan Colombia. Plan Colombia was a United States foreign and military aid initiative mainly to combat drug producers in Colombia. The plan was signed in 2000 by the Colombian government under President Andrés Pastrana and the Clinton administration (Veillette 2005; Petras and Morley 2013; Lippe 2014). The original object of the plan was financial support for the Colombian government from the US in the amount of US-\$ 7.5 billion to finance the necessary counter-drug operations. The close interdependence of the left-wing insurgents (FARC) with the drug production linked counternarcotics and counterterrorism operations indissoluble. In this context, the US Congress prohibited US combat troops taking part in these operations (Congressional Research Service (CRS) 2021). However, this ban was circumvented by the executive branch by contracting PMCs (e.g. DynCorp) for a sum of US-\$ 770 million to 1.3 billion to deliver combat tasks under this program (Abrahamsen and Williams 2007). In 2002, the US Congress reacted to this fact and announced that there was a close connection between the drug trade and terrorism in Colombia. The consequence was that US support was made „more flexible“ (Bureau of Western Hemisphere Affairs as cited in Hammer 2006).

The following circumstances are of particular importance in this context (Jason and Smith 2006): Since proprietary information is secret, the Department of Defense was not obliged to provide more information to Congress. PMCs referred to this fact in the case in question and refused to provide the Congress with further information, pointing out that they may only release information with government approval. Finally, under US law, executive agencies were not required to provide Congress with appropriate information in the case of PMC contracts valued at under US-\$50 million.

The case shows that Congress lost control over the use of funds to a certain extent and that the executive branch directed the funds to usages not apparently desired by Congress. On the one hand, there were laws, which certainly have their reason in the practicability in case of the supervision of the executive and which made a thorough accountability check more difficult. On the other hand, the executive branch, and in particular the Department of Defense, was able to cover up at least a large part of its behavior towards Congress. Due to insufficient transparency, Congress was not in a position to demand adequate accountability.

From an economic perspective, this is a negative technological externality. The contract between the PMC and the executive branch has side effects on the legislative branch, which is not involved in this contract. The situation is characterized by the fact that the relevant property rights are clearly defined, but they are circumvented by the executive. The problem consists in particular in the lack of transparency of the actions initiated by the executive, which leads to considerable transaction costs on the side of the legislature and thus makes it considerably more difficult to stop undesired military operations.

Second, enlisting PMCs reduces the national military's ability to conduct specific military operations. This increases the dependency on external service providers. This is accompanied by a reduction of the pool of retired personnel that has the required specific abilities and can be retrieved if needed (Avant 2005, 60-61).

In order to analyze this situation more deeply, a look at the Ethiopia-Eritrea conflict in 1998 to 2000 is appropriate. The confederation between Eritrea and Ethiopia, which had existed since 1952, was dissolved in 1993 and Eritrea gained its independence. Due to border disputes, a military conflict between both states broke out in 1998 and ended for the time being with an armistice agreement on 18 June 2000. As part of this conflict, Ethiopia contracted a small air force offered by the Russian company Sukhoi (Singer 2003, 158; Petersohn 2008). Due to this contract Sukhoi provided, among other things, combat aircrafts and the pilots. On the other hand, Eritrea hired Russian and Ukrainian pilots. In this context, the Ethiopian Air Force attacked civilian targets, but refused to engage Eritrea's Air Force.

In this case, it turns out that the Ethiopian military was not able to provide the required service, which is why this service was purchased from a PMC. Since this PMC refused to take action against the Eritrean air force and the Ethiopian side did not have the necessary military capability, the task could not be fulfilled.

This situation is characterized by the fact that the national military is not an independent entity, which decides for itself on its design. Rather the design of the national armed forces depends on the political decision-makers (legislative and/or executive branch). Therefore, from an economic point of view, the political decision-makers own the relevant property rights. Insofar, no external effect occurs in this situation. Rather, political decision-makers can decide whether to accept the lack of competence of the national military.

In the importing state, i.e. in the theater of operations, supposed negative externalities can arise, particularly in connection with the local military. In particular in weak states, these effects can go so far that the regular military carries out a coup (Singer 2003, 191-205). However, the deployment of PMCs can also lead to a strengthening of the relationship between the regular military and the civilian government, e.g. if the PMC helps to increase the professionalism and prestige of the regular military or reduces the risk of the regular military being demobilized.

This fact can be illustrated by the so-called Sandline Affair (Kinsey 2006): In Papua New Guinea, in the late 1980s, the Bougainville Revolutionary Army (BRA), a secessionist movement, conquered the

copper mines in Bougainville, whose copper was of considerable importance for the entire country's exports (Regan and Dinnen 1997). Since the national armed forces (Papua New Guinea Defense Force – PNGDF) were unmotivated and poorly equipped, they were unable to push back the BRA. As a result, the then Prime Minister of Papua New Guinea, Julius Chan, signed a contract with Sandline International, a PMC, in 1997. Sandline's task was initially to train the PNGDF's special forces and then take offensive action in Bougainville (Dinnen 1997). The Supreme Commander of the PNGDF then condemned the contract, demanding that the amount of money that was intended for Sandline should better go to the PNGDF. The prime minister then dismissed the Supreme Commander, which eventually led to riots and caused the government to resign (McCormack 1998).

From an economic perspective, the Sandline Affair is similar to the Sukhoi case: In the case of the Sandline Affair, too, the relevant property rights belong to the political decision-makers, here the prime minister. He made the decisions related to the national military which is no independent entity. Thus, his decision in the Sandline Affair had a direct impact on the national military, an entity dependent on him. And it did not adversely affect independent third parties at the end, but led to his overthrow of which he should have been aware if he had assessed the facts carefully. Insofar no negative external effect can be identified, since the direct effect occurs on the military and the indirect effect on the political decision maker himself.

From an economic point of view, the bypassing of the legislative branch by the executive branch is the only relevant negative technological externality at the level of the national state. In this case, it makes sense to use instruments to internalize it.

Potential Negative Externalities in International Power Tectonics

However, a market for private military services is changing not only the intrastate tectonics, but also the interstate tectonics of power. From an political economic point of view, the relation between states and other entities acting at this level can be understood as a competition for influence and resources (Milner 1998).³ The result of this competition at a certain point in time is expressed in a certain structure of international power tectonics. In this competition, military means are among the tools to gain an advantage over potential competitors. Starting from this perspective, we will analyze the impact of PMCs.

First, PMCs create a security dilemma. The possibility of a state or another client to increase his military potential through contracting PMCs quickly, non-transparently and significantly can lead to an arms race (Pattison 2014, 141-158; Taylor 2015, 17-18; McFate 2020): Since the opponents are aware of this possibility, opponents may try to respond with similar measures and reinforce their military forces. In this way, the following spiral can arise: To protect itself from potential adversaries, a state can contract a PMC. This action originally aimed at defense can be misinterpreted by the potential adversaries as an intention to attack. Therefore, the adversaries could react by hiring PMCs as well to strengthen their military force. Thus, the ability to contract PMCs expands the set of strategic options of the competitors in an arms race and, in this way, intensifies the latter one.

These effects can be seen at least partially by analyzing the Ethiopia-Eritrea conflict in 1998 to 2000: The existence of an Eritrean air force with Soviet combat aircrafts and Russian resp. Ukrainian pilots prompted Ethiopia to seek support from Sukhoi, which – as reported above – offered not only combat aircrafts but also pilots.

An analysis of this situation from an economic point of view must come to the following conclusion: The effect of hiring PMCs by one of the two states directly involved in this conflict deteriorates the position of the other one in the competition between states for influence and resources. Insofar it is a pecuniary externality. Besides that, the actions of the two antagonists have side effects on previously uninvolved third countries, such as Sudan or Djibouti: Since the fighting parties hired PMCs, they expanded their military force. At the same time, the military potential of the uninvolved parties becomes relatively weaker. In other words, the uninvolved parties' position in the competition for influence and resources deteriorates. Thus, they suffer from a negative pecuniary

external effect, too. Insofar, in this case there is no need for internalisation of the described side effects.

Second, the possibility of acquiring military services with financial resources changes the market position of individual entities in this competition and in this way the international power tectonics (Pattison 2014, 159-165; Taylor 2015, 18). On the one hand, new entrants can appear: Financially powerful individuals or NGOs are put in a position to make use of considerable military potential (McFate 2019) and to act on an equal footing with states. On the other hand, rather subordinate players are becoming increasingly important: States that have considerable financial but few human resources and therefore play a subordinate role from a military point of view, or states that are under the sovereignty of a powerful state and have to rely on the powerful state's military support are now in a position to accumulate considerable military potential in a shorter period of time. This can have a significant impact on the balance of power in regions and reduce or even reverse the previously existing relationship of dependency (Singer 2003, 169-190; Krieg 2022).

We want to analyze this phenomenon using the military intervention of the United Arab Emirates (UAE) in the Houthi conflict in Yemen, which has been going on since 2004. The main antagonists in this conflict are the Houthi rebels (Ansar Allah), a Zaidi-Shiite movement, and partisans of former Yemeni President Abed Rabbo Mansur Hadi (Lackner 2019). However, a large number of other protagonists such as Iran, Saudi Arabia, Al-Qaeda and IS-affine groups also intervened in this civil war (de Jongh and Kitzen 2021). The UAE – a fairly populous, but financially powerful confederation – play an interesting role in this conflict (Juneau 2020). In order to assert their interests, the UAE contracted several PMCs, including the Colombian PMC Global Enterprises, which deployed a larger number of troops in Yemen (Hager and Mazzetti 2015; Krieg 2022).

This case shows that a rather militarily weak player, who would otherwise have subordinated himself to the interests of more powerful players (here: Saudi Arabia), now intervenes on an equal footing and is able to assert his own interests. With this intervention, the weaker player is now changing the international power tectonics.

How is this situation to be assessed? As a result of hiring a PMC, one of the players (here the UAE) gains a better position in this competition between states, which means that the position of the other players (here e.g. Saudi Arabia) deteriorates. With other words: Some states or other entities are succeeding in making the production of military influence more cost-effective by obliging PMCs and thus changing the original market equilibrium in their favor. In this respect, the other competitors suffer from a negative external effect. In this case, however, this negative external effect is inherent in competition. It is precisely necessary for competition to work as described above, and it is also the result of this competition. Therefore, we are dealing here with a pecuniary external effect that does not have to be internalized.

Third, being able to secure the service of PMCs might diminish trust in international arms control treaties aimed to limit the troop strength, since the regular military can be reduced in accordance with the treaty and, if necessary, the military potential can be immensely expanded within a shorter period of time by hiring PMCs (Singer 2003, 175-176). This can also trigger a surprise effect. From an economic point of view, there are clearly specified property rights. However, this is not a negative technological externality, since the parties concerned are the contractual partners themselves and there are no indirect negative effects on uninvolved third parties. In addition, the transparency of the parties involved is comparatively high: They know that there is the possibility of significantly expanding the military potential of a party within a short period of time by hiring PMCs. A solution to this problem can therefore be achieved by adapting the content of the treaty and integrating appropriate control mechanisms.

Fourth, the possibility of recruiting PMCs changes the tectonics of military alliances, which are often based on functional differentiation between the partners and therefore create dependencies (Murdoch 1995). The possibility of recruiting PMCs to close the gaps that the alliance partners would otherwise fill, reduces the stability of such alliances (Singer 2003, 176-178). Finally, the existence of

a market for military services can mean that even wealthy individuals can slip into the role of an alliance partner.⁴

From an economic point of view, an alliance can be interpreted in two ways: On the one hand, an alliance produces a club good, namely security, of which the alliance partners benefit (Sandler 2020). It is possible to exclude non-members from using it. On the other hand, an alliance represents a cartel: The members of the alliance sign a contract in order to gain an advantage in the international competition for influence and resources. The ability to contract PMCs is now changing the economic position of one or more members, both in international competition and in the cartel. In principle, PMCs are substitutes for the services of the other cartel members. In this way, they devalue the services of the other alliance partners for the member that is able and intends to contract a PMC. In this regard, the potential contract between the client and the PMC causes a negative pecuniary externality for the remaining members of the alliance. The other members have to offer higher services in order to get the same service from the alliance partner contracting a PMC. As we have seen above, internalizing this pecuniary external effect does not make sense.

If we look at the alleged negative external effects in the area of international power tectonics, which are triggered by PMCs, we can state that these are either in fact no negative external effects or pecuniary external effects. Insofar an internalization of these effects in the area of international power tectonics does not make sense.

Potential Alternatives to Reducing the Negative Technological Externalities

The economic analysis of the negative externalities potentially caused by PMCs shows that there could be a need for intervention exclusively in the case of issue (1): Damage to civilians and their property in the theater of operations, and of issue (2): Circumventing the legislative branch. All other phenomena discussed are either no externalities or pecuniary externalities. Whether an intervention should actually take place in (1) or (2) can only be answered on the basis of a value based judgment and is therefore necessarily normative. In the following, therefore, only possible intervention options from an economic point of view will be shown and discussed. In doing so, we try to refine the theory based on the insights from the case studies. In this respect we continue with the fourth step.

In principle, two alternatives can be identified as to how the negative externalities can be dealt with. On the one hand, this is the complete renunciation of an intervention and, on the other hand, entities on different levels could intervene and use the various instruments mentioned above. An intervention can take place at different levels: Either at the level of the state or at a supranational level (Schreier and Caparini 2005, 116-126).

Renunciation of Intervention

The first alternative would leave the market for private military services unregulated and would be the one associated with the lowest costs of enforcement. In an unregulated market, the various providers would try to sign contracts, the quality of service – especially with regard to accepting damage to civilians – would differ greatly, since some clients are interested in an effective covert operation and compliance with national law and international humanitarian law is of little importance for them (Singer 2003, 216-220; Bearpark and Schulz 2007). On the other hand there are clients who try to stick to the norms of law.

An unregulated market would lead to forms of self-regulation – as it is already the case (Schneiker 2008; Prem 2020; Swed and Materne 2021). Providers who submit to this self-regulation signal that they comply with certain standards such as the qualification of the staff and also the requirements of international humanitarian law. They try to gain a competitive advantage and stand out from their competitors (Schneiker 2008; Schulz 2008, 161). The aim is to sensitize the client to such an extent that the market segment ‘downscale firms’ is marginalized. At the same time, rising insurance

premiums for providers who are not subject to self-regulation could prompt the latter to rethink (Bearpark and Schulz 2007).

Whether self-regulation can be successful depends on whether there is transparency and there are appropriate preferences on the demand side (Schneiker 2008; de Nevers 2010). If these conditions are met, self-regulation will push back downscale firms (Dunigan 2015, 233).

It seems questionable whether individual dominant buyers such as the US or demand cartels can set the rules through their market power: On the one hand, the market is very strongly differentiated regionally, so that a wide variety of clients are dominant in the individual market segments (Petersohn et al. 2022; Dunigan 2015, 232), and on the other hand, demand cartels are not particularly stable in this market (McFate 2019).

In addition to self-regulation, another sanction mechanism for downscale firms could appear in a free market, which works through the staff of the PMCs. For example, Brooks (2015, 190) does not see the danger as particularly great that former military personnel will sign up for downscale firms, since this would put their highly valued veteran status, their reputation or even their lives at risk. In this context, contractors will weigh up the costs and benefits of their alternatives. The empirical study of Battka et al. (2020) shows that contractors are primarily motivated by the salary, the belief in the mission of the work and the opportunity to use their skills and experience in the work.

Franke and v. Boemcken (2011) come to slightly different results in their empirical study. According to them, financial motives and the search for adventure and excitement play a rather subordinate role. On the other hand, they find out that 'the opportunity to face and meet new challenges and to help others' are the most important motivators for contractors (Franke and v. Boemcken 2011, 737). The veteran status is of crucial importance, especially for veterans from countries that provide adequate care like the US, especially from a financial point of view. This can cause such veterans to stay away from downscale firms, although, as Franke and v. Boemcken (2011) show, other motives could also tempt these people to hire themselves out as contractors to a downscale firm. Nevertheless, the financial situation of the veterans is different, especially in developing countries, so downscale firms should not have any difficulties in hiring contractors from these countries. Therefore the mechanism described by Brooks (2015) seems to be rather weak.

As we have seen above self-commitment can certainly be effective in certain segments of the market – such as the commitment of PMCs by the UNO or by international corporations – but remains irrelevant in a large part of the market. Overall, the main problem with self-regulation is that it does not apply to the service providers, who are responsible for a large part of the negative external effects of issue 1 (McFate 2019). This means that issue 1 can be solved in the first market segment, but remains unsolved in the latter market segment. Besides that a market exclusively based on self-regulation would still mean that issue 2 would not be solved.

A Ban on Private Military Companies

A second option is to ban PMCs. A ban on PMCs that could be fully enforced would certainly largely eliminate the negative technological externalities of PMCs. However, it turns out that even states with very strong military forces like the US prefer to use private military companies at least in the short run, although not necessarily for combat purposes. For example, private military and security companies accounted for around fifty percent of the US armed forces during the military intervention in Iraq and around seventy percent during the same in Afghanistan (McFate 2019, 18). Therefore practical reasons speak against a ban. Besides that, since there is demand for such private military service providers in both strong and weak states, it is to be expected that a black market would establish itself on which such services would be offered – then exclusively by so-called downscale firms.

Another problem of a ban would be its worldwide implementation. Since the enforcement of a ban incurs costs and the preferences of the states are likely to be very different for a wide variety of political reasons, the enforcement of such a ban would be more than doubtful, especially since it also

has the characteristics of a collective good. Overall, it can be assumed that this option will not solve the problems presented (Percy 2007).

Differentiated Market Regulations for Private Military Companies

As we have seen above, there are several ways to internalize negative technological externalities: A Pigovian tax, Coasean bargaining, command-and-control regulations, and a cap-and-trade approach.

Potential Solutions for Issue 1

Issue 1 is characterized by the fact that the property rights are clearly defined and if they were followed, the population in the operational area would be protected against harm caused by PMCs' actions. However, the conditions, namely a high level of non-transparency with regard to the perpetrators, a low interest on the side of the client in reporting and prosecuting violations and the inability of the importing state to prosecute violations cause that those responsible for violations of national and international humanitarian law are not held accountable.

A Pigovian tax and a cap-and-trade approach are not suitable for achieving the goal of completely repressing violations of international humanitarian law as far as possible. With these instruments, a significant level of violations of legal norms would be tolerated. In the case of the Pigovian tax, this would mean the following: The national legislature would levy a tax on contracts concluded with PMCs, e.g. in the form of a value-added tax. This would increase the price of the PMCs and therefore national military would be used more, since this would then be relatively cheaper. In addition to the theoretical problems of how high the tax should be and which contracts and which military providers should be taxed, there are considerable problems associated with the implementation of a Pigovian tax: If it is levied by the exporting state, it can be circumvented in the area of operation, since the exporting state has only limited control possibilities there. In the relevant case study, this would mean that Blackwater's contract would be taxed by the US state. Probably, the result would be that the American executive branch or the American military would contract PMCs directly on site and thus avoid the Pigovian tax. Even the importing state is only able to a limited extent to enforce the tax, since this is the area of operations and the state administration only works to a limited extent. In our example, that would mean that the Iraqi state would collect the tax. Since the American military could easily cover up the use of the PMC, e.g. by disguising its members as regular military personnel, this approach is unlikely to be very promising either. The same objections as to taxation by the exporting state can be raised in the case of taxation by a supranational organization such as the UN. The problems concerning the Pigovian tax also apply to the cap-and-trade approach, which is intended to limit the number of PMC services used. In addition to the theoretical deficits, there are the same problems with the practical implementation, how they occur with the Pigovian tax.

Coasean bargaining would also not be expedient, since it fails precisely because the injured parties have big problems to enforce their rights against the PMCs. This is particularly evident in the Nisour Square Incident case. Only after a long time and under considerable pressure from outside, the relatives of those killed are able to receive small compensation payments. The punishment of the perpetrators is also very hesitant and is finally suspended.

In this respect, only command-and-control regulations remain to solve the problem at hand.

There are two starting points for such regulation: On the one hand, regulation could be designed to be reactive. This requires that in issue 1 violations of national law and international humanitarian law in particular can be identified as such and prosecuted. On the other hand, regulation could aim to prevent violations of national and international humanitarian law. Such kind of regulation would have to apply directly at the PMCs' level with the intention of channeling the behavior of the PMCs. Nevertheless, a reactive approach would also have a behavior-controlling effect at the level of the PMCs and would therefore have a preventive effect.

A reactive approach must aim to identify perpetrators, prosecute them accordingly and ensure that any damage incurred is adequately compensated. As was made clear above, clients often have no interest in uncovering such violations. In this respect, a reactive approach must rely on a neutral institution. Such an approach could consist of sending neutral observers to the operational area, who identify violations of national law and international humanitarian law and the parties involved. Observers must be equipped in such a way that they can also carry out such observations in a goal-oriented manner and also do not run the risk of being overwhelmed by the PMCs. Since, from an economic point of view, the observers produce a collective good and they should be impartial, the UN would be a suitable responsible organization that would have to undertake both the financing and the recruitment of the observers. Certainly, other measures that create transparency would also be possible, which are to be located at the individual state level, but therefore often have the problem of partisanship. At the same time, the UN would have to ensure that the PMC or its client pays for the damage caused to civilians or their property and makes sure that violations of national law and international humanitarian law are prosecuted and punished.

A preventive approach could regulate market access or market behavior. Here, too, the approach can start at a national or at a supranational level. At the national level, the following alternatives can be identified with regard to the extent of market access (Foreign and Commonwealth Office 2002, 22-26; Schreier and Caparini 2005, 116-125), with a wide variety of forms being established in the individual states (Cockayne 2007):

- (1) A ban on providing military services abroad
- (2) A ban on recruiting nationals for military service abroad
- (3) A licensing system for military services
- (4) The obligation to register if military services are to be provided abroad
- (5) The general admission of military services abroad

While an effective enforcement of the first two alternatives in all states would lead to a collapse of the market for private military services, alternative 5 would largely enable a free unregulated market and thus not solve the problem addressed as we have seen above.

The obligation to register if military services are to be provided abroad would at least help to improve transparency in case violations of national law and international humanitarian law occur in the theater of operations. However, a licensing system would make it possible to channel the market. It could be designed with a wide variety of variants in order to curb the negative externality mentioned above:

- PMCs who are not subject to self-regulatory standards (McFate 2015, 149-159) or which do not meet certain quality requirements (e.g. with regard to rules of conduct, recruitment, accountability, transparency etc.) could be excluded.
- Licensing could be limited to PMCs that have a direct connection to the exporting state (Percy 2007), so that the latter ones can be held accountable for legal violations.
- The granting of a license could be linked to the fact that the contract between the client and the PMC provides for the fulfillment of certain standards (e.g. compliance with national law and international humanitarian law, monitoring, establishment of internal audits etc.) (Dickinson 2007).

Basically, all three forms of licensing are suitable for at least partially reducing the risk of violating national law and international humanitarian law in the theater of operation if they are effectively implemented by all states. However, considering the highly unpredictable frictions in the theater of operations such a regulation of market access can only insufficiently guarantee that the licensed PMC avoids completely to cause damage to civilians and their property in the theater of operation.

With regard to market behavior, a wide variety of monitoring instruments such as the deployment of monitoring personnel, reporting, whistleblowing, and silent shopping can be used (Cockayne 2007, 202; Ramirez and Wood 2019). While whistleblowers are individuals who pass on important information from a secret environment (Givati 2016), a silent shopper or a mystery shopper is a person or institution who is commissioned by a client to act as a customer or bogus customer (Jacob, Schiffrino, and Biard 2018). Both instruments serve to increase transparency.

However, the effective implementation of national regulations quickly reaches its limits, some of which have already been mentioned above: On the one hand, it is difficult to check that the PMC is behaving in accordance with the standards in a foreign theater of operation (Avant 2005, 65-66; Singer 2006; Bearpark and Schulz 2007; Swed and Materne 2021). On the other hand, PMCs can avoid criminal prosecution or a loss of reputation by relocating their seat to a state where the national regulation is weaker or does not exist or simply by rebranding (Bearpark and Schulz 2007). In addition to these problems, PMCs may avoid punishment by violently evading or even overpowering law enforcement agencies (McFate 2019).

At the supranational level, regulation of market access requires the cooperation of the individual states. Since some individual states have other preferences, as we have discussed before, it can be assumed that such a regulation can hardly be enforced worldwide. However, the instruments mentioned for monitoring the behavior of PMCs can be implemented very well at the supranational level, as we have discussed above.

Summing up the considerations for solving issue 1, a supranational approach aimed at uncovering violations of national and international law in the theater of operations as well as making them prosecutable seems to be preferable. Supporting this with national measures to regulate market entry would certainly be helpful. On the supranational level it would be important to install transparency-creating measures. These should ensure that, on the one hand, PMCs and its employees can always be identified and, on the other hand, that the client could be traced back. In principle, this requires a corresponding international database containing the essential information about the PMCs and their employees. The Commercial Military Actor Database (CMAD) (Petersohn et al. 2022) is an important basis for this. In this way, on the one hand, the sanction potential of the competition would be increased, since misconduct or poor performance can now be prosecuted by the customer. On the other hand, this would make it possible to prosecute and hold the client accountable in the event of misconduct. To this end, it would make sense to provide the relevant international organization (here, e.g. the UN) with at least the appropriate financial resources to enable effective implementation of the regulation.

Potential Solutions for Issue 2

The second issue is characterized by the fact that clearly defined property rights are violated on the level of the individual state. Therefore, a solution to this problem must also be located at this level. Basically, the legislature usually has the appropriate instruments at hand to prevent the described externality, insofar as it becomes aware of it.

Since there is a high degree of opacity in connection with contracting PMCs, a Pigovian tax, the cap-and-trade approach and Coasean bargaining are hardly suitable as a solution for issue 2, as they require the regulator to be aware when PMCs are contracted. In this respect, there are still options to solve the problem, in particular command-and-control regulations, which can be expanded to include instruments that create transparency.

For example, a national ban on the use of PMCs, which is effectively implemented, would definitely eliminate the problem. Of course, less strict forms of regulation as just discussed like different requirements for licensing would also solve the externality in question, if they can be enforced. In order to ensure compliance with the regulation by the executive, it is therefore necessary to supplement it with measures that create transparency. In particular, whistleblower or silent shopper approaches could be used here.

Applied to our case study, this would mean the following: In a first step, Congress would enact a corresponding regulation that would only allow the executive branch or the DoD to contract PMCs that meet certain standards and have a corresponding reputation. In a second step, the Congress would instruct an appropriate administrative department or engage an independent organization to use methods such as whistleblowing or mystery shopping to create transparency. Based on their insights non-compliant behavior would be sanctioned.

Overall, the externality of issue 2 can be solved comparatively effectively by the measures outlined.

Results

It turns out that partially effective solutions exist for the two potential negative technological externalities that can arise in connection with hiring PMCs. For example, violations of national law and international humanitarian law in the theater of operation (issue 1) can be limited by appropriate monitoring measures carried out by a supranational organization. The problem of a lack of control by the legislative branch (issue 2) can be effectively addressed by a ban on the use of PMCs or a licensing system combined with measures to create transparency.

Limitations

The limitations of our research approach result from the applied methodology. On the one hand, the potential negative externalities have been extracted from the literature. Thus, it cannot be ruled out that other side effects also exist, but which are given little or no mention in the literature. Hence, further potential negative externalities could be uncovered by additional qualitative survey methods such as focus group interviews or expert interviews.

The present study uses the instrumental case study method. This makes it possible to uncover various interdependencies between the relevant participants. Of course, since the case studies always only depict a certain unique situation, other connections are not taken into account. More in-depth knowledge could be gained through further case studies or through a quantitative survey. However, a quantitative survey would be confronted with the problem that, on the one hand, the willingness of those questioned to provide information would be low and, on the other hand, various information would be classified, so that passing them on would have legal consequences.

Conclusions

Sometimes hiring PMCs has significant side effects. From the perspective of the theory of external effects, it becomes apparent that, on the one hand, the damage to civilians or their property in the theater of operation and, on the other hand, the circumvention of the legislature by the executive branch in the exporting state are significant negative technological externalities that should be internalized. All other phenomena discussed, such as e.g. the increasing fragility of international power tectonics, are either no externalities or are pecuniary externalities and inherent in the competition for influence and resources, and thus have to be accepted. In this context, PMCs are just an additional tool for states or other institutions at this level to position themselves better in this competition.

There are various possible solutions for the identified negative technological externalities. Since there are corresponding legal requirements in the first problem area, but their enforcement fails in particular due to a lack of transparency, preference should be given to instruments that create this transparency and enable the enforcement of claims for damages or enable perpetrators to be sued. Such instruments should be implemented by a supranational organization that should be equipped with the appropriate resources.

In the case of issue 2, the combination of a market access regulation and transparency-creating measures is appropriate. For example, the legislature should first limit the group of PMCs that can be contracted to those that meet certain standards. At the same time, the legislature should ensure the executive's compliance with this regulation, either directly or through commissioned organizations, and sanction deviating behavior.

All in all, the possibility to contract PMCs is significantly changing not only the domestic but also the interstate power tectonics.

Notes

1. Private military providers are labeled with different terms and are defined in many different ways. Schreier and Caparini (2005, 14–22) present an overview of various attempts to define the terms.
2. Reputational risk is the danger that the good name of an organization or an individual can be damaged by the actions of this organization resp. this individual or by their contractual partners like employees or suppliers. See Gaudenzi, Confente, and Christopher (2015) for an overview of the literature of the reputational risk effect.
3. The idea of a competition between states is based on Tiebout's approach (Tiebout 1956). See, e.g. Sinn (2004). The economic theory of arms race is essentially based on this insight. E.g. see Isard (1989), Brito and Intriligator (1995) and Intriligator and Brito (2000).
4. Singer (2003, 179) mentions the example of the Thai businessman Rakesh Saxena, who co-financed the operation of the PMC Sandline in Sierra Leone.

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