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Analyzing the Impact of Dodd Frank Mining Legislation on Sexual Violence in Eastern Democratic Republic of Congo

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Abstract:

Proponents of 'conflict mineral' legislation, known as Dodd Frank Section 1502, describe sexual violence as a symptom of a conflict caused by access to and control over vast mineral wealth, particularly 3T mining (tungsten, tantalum, tin) in the Democratic Republic of Congo. Profits are said to fund continued conflict and staggering levels of sexual violence. Not only has DRC been described in popular media as 'the worst place to be a woman', but rape has been characterized as 'endemic' and a 'weapon of war', and DRC has often been called the 'rape capital of the world'. Using a difference in difference model, this paper first tests the assumption that sexual violence was higher in areas targeted by the policy than similar mining-areas lesser affected or unaffected, then tests if and how a targeted sanction, which became a de facto boycott, achieved the predicted decrease in sexual violence. Our evidence first leads us to dispute the claim that the presence of a 3T mine within 20km necessitated a de facto boycott, given that only places within 20km of a 3T mine and within Maniema, South Kivu and North Kivu had significantly higher levels of sexual violence. Furthermore, while we find an overall decrease in sexual violence from 2007 to 2013/2014, it is not attributable to the de facto boycott. Maniema, South Kivu and North Kivu remain places with a greater likelihood of sexual violence than comparable, eastern provinces. The presence of a 3T or gold mine does not uniquely predict, sexual violence. We conclude that a targeted sanction, in this instance, was both an inappropriate and ineffective economic tool to achieve an improved social or health outcome, that is, a significant decrease in sexual violence.

Key words: sexual violence, conflict minerals, policy, advocacy

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I. Introduction

On July 21, 2010 the United States enacted a set of policies known as the Dodd-Frank Legislation in which Section 1502 established traceability parameters for conflict minerals that immediately and intimately affected mining communities in the Democratic Republic of Congo. This policy gained support in the United States through various advocacy and research groups who claimed that national and rebel militaries access to valuable minerals financed the ongoing conflict, including widespread sexual and domestic violence against women. DRC had then gained the title as the "worst place to be a woman" and "rape capital of the world" [1] through advocacy and awareness efforts that seamlessly tied together sexual violence, conflict, and minerals. The policy was structured to address, specifically, the types of minerals and specific locations presumed to be most notorious for this conflict. By targeting sanctions on areas with the highest artisanal mining concentrations of 3T minerals (tungsten, tantalum, tin), the policy intended to stifle the profitability of mining, reducing the ability of rebel groups to finance conflict activities, which would, in turn diminish the rampant sexual violence which has been labeled a symptom of mineral exploitation by armed groups. This story gained traction with the general public, who were sold on the story of a conflict that, fueled by the minerals used in "our" technology was causing the widespread rape of women and girls.

The paper focuses on the intended outcome of this policy to decrease sexual violence against women in the Democratic Republic of Congo. We used the Demographic Health Survey (DHS) from the Democratic Republic of Congo, evaluating two time periods, 2007 and 2013/2014, to

[1] See https://www.hrw.org/reports/2002/drc/Congo0602.pdf

first determine whether or not (in 2007) areas targeted by the policy had significantly higher levels of sexual violence; second, ascertain the impacts of Dodd-Frank mining legislation on intimate partner sexual violence and non-partner sexual violence; and third, explore changes in comparable gold mining areas. Matching the DHS data points to the spatially explicit mining closure information used by Parker and Vadheim (2013), we specifically compared regions with known mining activity, which were impacted by the changes posed by Dodd-Frank legislation and the subsequent *de facto* boycott. This allowed us to use a difference-in-difference methodology in which we observed households in proximity to affected and unaffected mining zones before and following the Dodd Frank induced *de facto* boycott. The difference-in-difference method provides a consistent unbiased measure of the treatment effect on sexual violence outcomes.

We find that areas most affected by the *de facto* boycott did not, prior to the *de facto* boycott, have higher rates of sexual violence than those lesser affected or unaffected by the *de facto* boycott. We also find that rates of sexual violence are relatively less in 2013, but this change is not attributable to the policy. We find that rates of sexual violence, in eastern Congo, remain statistically higher in the provinces of North Kivu, South Kivu, and Maniema. Yet, the presence of a 3T mine, within or outside those provinces, does not uniquely predict higher levels of sexual violence. Our results refute that an economic sanction can be an effective tool to address a social problem. While sexual violence has decreased from 2007-2013/2014, we theorize that this could either be attributable to measurement challenges (i.e., migration, death) or broader social change, not an economic policy.

We first begin by describing Dodd-Frank Section 1502, its' antecedents, supporters, critics and timeline for implementation. Next, we summarize related literatures on sexual violence globally and in DRC, and artisanal scale mining globally and in the DRC. We then describe our data sources and specify the model, followed by reporting of the results and a discussion.

II. Background and Related Literatures

Dodd Frank Section 1502

Proponents of Dodd-Frank Section 1502 claim that profits from mining fuels conflict, which in turn has fueled violence against women[2]. Advocacy groups played a critical role in designing, gaining support for, and ultimately passing Dodd Frank Section 1502 legislation, using the dominant narrative questioned by prominent researchers of the conflict in eastern Democratic Republic of Congo. In the Enough Project's strategy paper in support of Dodd-Frank Section 1502 legislation, "Can you hear Congo now? Cell phones, conflict minerals, and the worst sexual violence in the World", Prendergast reiterates the link between minerals, conflict and sexual violence:

> "[…] sexual violence has become a tool of war and control for the armed groups in Congo on an immense scale. The Congo war has the highest rate of violence against women and girls in the world, and reports indicate that hundreds of thousands have been raped, making it the most dangerous place in the world to be a woman or girl" (Prendergast 2009:1).

[2] See http://www.enoughproject.org/special-topics/progress-and-challenges-conflict-minerals-facts-dodd-frank-1502

The Enough Project's influential lobbying included partnerships with both public and private entities, and built on the collective horror of sexual violence against women and girls driven by conflict over minerals – all the while, scholars continued to debate what drives continued insecurity.

"Conflict minerals", in DRC, are defined as columbite-tantalite (coltan), cassiterite, gold, wolframite, or their derivatives sourced in the Democratic Republic of Congo or neighboring countries (Business for Social Responsibility (BSR) 2010). "Conflict minerals" are extracted by small scale, artisanal operations, are taxed (at various production and selling points) or pillaged by warlords and leaders of armed groups, and through which military factions fund operations against the national army and the local population. Though, Rackley writes that, "[…] there is much more to the country's crisis than subterranean treasures and trafficking: such a view ignores widespread forms of predation by the civil and military administration in many spheres of human exchange"(Rackley 2006:420). Importantly, this arbitrary taxation, fictitious fines, and invented fees has historical precedents dating back to even before the Mobutu era, and is perpetrated by both state and non-state actors alike. While no one disputes there that are, at best, undesirable groups that benefit from these practices, both state and non-state actors, the summary that follows attempts to further characterize and clarify these mechanisms as well as demonstrate how a less nuanced narrative informed a targeted sanction with unintended consequences as well as failure to achieve intended outcomes.

Formalization of the mining sector first aimed at reducing the ability of armed groups to profit from natural resource extraction. A UN Group of Experts on the Democratic Republic of Congo

introduced the concept of due diligence, which was transformed into a five-step framework formalized by the OECD to deal directly with companies that use or supply tin, tungsten and tantalum from areas suspected of human rights abuses or from conflict zones(Manhart and Schleicher 2013). In the United States, House Resolution 4128 began the Conflict Minerals Trade Act in April 2009 with the purpose to: "[…] help stop the deadly conflict over minerals in eastern Congo by regulating the importation and trade of tin, tungsten and tantalum […]"[3]. Furthermore, maps were produced and mines designated to show which were supporting the conflict (Parker and Vadheim 2014).

Section 1502 of Dodd-Frank Legislation built on the concept of due diligence, moving from voluntary to mandatory reporting. Section 1502 specifically created traceability and reporting standards for defined 'conflict mineral' areas for companies publicly traded on the United States stock exchanges [4]. Section 1502 created mandatory due diligence reporting for minerals originating in the DRC or adjoining countries. Companies must "[...] provide a report describing all measures taken "to exercise due diligence on the conflict minerals' source and chain of custody", including independent auditing results"(Manhart and Schleicher 2013).

While these policies do not ban minerals from the region, they increase the difficulty and expense of purchasing and using these minerals in products, creating an effective boycott and impacting prices of commodities (Gobrecht 2011; Parker, Foltz, and Elsea 2017). In addition, the products that specifically use coltan (coming from 3T mines), a major perceived source of rebel group funding, are processed outside the DRC and sold in mostly non-DRC markets, meaning

[3] https://www.congress.gov/bill/111th-congress/house-bill/4128
[4] See www.opencongress.org/bill/111-s891/show

demand will still exist and multiple levels of stakeholders outside the DRC have power to affect DRC mining (Mthembu-Salter 2009; Bleischwitz, Dittrich, and Pierdicca 2012). Demand is thus driven underground. In this context, miners work in worse conditions, receive lower prices, and are worse off by the inefficiency caused by the policy (Seay 2012; Mthembu-Salter 2009).

Congress passed Section 1502 of the Dodd-Frank Act on July 21, 2010. Not to be outdone, in September 2010, the Congolese government imposed a targeted ban on artisanal mining in Maniema, North Kivu and South Kivu. The ban was lifted in March 2011, and effectively replaced in April 2011, when the Electronic Industry Citizenship Coalition (EICC), a coalition of large electronics and high-technology companies, stopped buying 3Ts from smelters that could not prove source minerals did not fund conflict in DRC (Wimmer and Hilgert 2011; Parker, Foltz, and Elsea 2017). These events acted as a *de facto* boycott of 3T minerals, as companies, instead of paying the cost of reorganizing and complying, avoided purchasing from the entire zone (Seay 2012). Thus, the Dodd-Frank Section 1502 induced *de facto* boycott created a study period, beginning in July 2010, whereby we can evaluate its' effectiveness in reducing sexual violence, a stated goal of the policy advocates.

Exports significantly dropped in 3Ts in the period following, though they increased in Katanga province which was exempt from the ban (Parker, Foltz, and Elsea 2017). By 2012, reports emerged that miners lost income, faced no improvement in the threat of violence or intimidation, and smuggling minerals via Rwanda increased (Seay 2012). Contrary, or unrelated, to reports from prominent scholars on mining in the DRC, reports from the Enough Project to date signal major victories including, 166/193 mines passing an assessment for conflict and child labor

issues, a record increase in North Kivu of conflict-free minerals, and 70% of tin, tantalum, and tungsten mines in 2014 being certified 'conflict free' by IPIS(Foundation et al. 2016). Though, these reports rarely capture, in a rigorous way, the indicators that drove the emotional response and support for these policies, namely sexual violence against women and girls. Parker and Vadheim found that violence increased in the short term, including looting of civilians and shifting activities towards gold mines (Parker and Vadheim 2014). Furthermore, Parker, Elsea & Foltz found infant mortality increased by at least 143% following the de-facto mining ban, by decreasing spending on health goods and services in affected areas (Parker, Foltz, and Elsea 2017). Despite changes in ASM by Section 1502, studies have shown that Congolese continue to migrate towards the mines, pushed by the need for money or employment, and that this migration includes women. Maclin et al. find that women were more likely than men to migrate to mining areas, and other studies characterize women's motivations and roles in ASM communities (Maclin et al. 2017; Bashwira et al. 2014). Finally, the effort to quantify and characterize sexual violence in eastern DRC continues, echoing the same sentiments prior to the ban, mainly that sexual violence has persisted (Rustad, Østby, and Nordås 2016; Palermo and Peterman 2011; Cohen and Nordås 2014; Laplante and Lakin 2017).

Sexual Violence

Sexual Violence Globally

Violence against women, specifically sexual violence, occurs throughout the world with 35% of women worldwide reporting have experienced either physical and/or sexual violence, and over one third of women worldwide report having experienced physical and/or sexual violence by their partner (García-moreno et al. 2005). Violence in conflict and post conflict situations has been well studied subset of sexual violence study. Advocacy groups, journalists, and scholars

alike have described rape as a "weapon of war", a simplification that many find troubling (Baaz and Stern 2009). Theories about why violence against women during war occurs describe the phenomenon as a combination of sociocultural and genetic factors, including that it has been a feature of war in different political, religious, ethnic, and economic systems and has happened in many conflicts over time that vary in intensity, geographic location, environmental context, and sociocultural and political (Gottschall 2004; Snyder et al. 2006; Skelsbaek 2001; Trenholm, Olsson, and Ahlberg 2011). Rape is also seen as, "[…] a byproduct of war, albeit a more complicated one which also is about violence, aggression, humiliation, and power intermingled with sexual need and desire"(Baaz and Stern 2009:498). Enloe describes three types of rape in conflict, each with specific motivations of perpetrators, "recreational rape", "national security rape", and "systemic mass rape" (Enloe 2000).

Indeed, though rape became more widely recognized as a feature of war following World War I and World War II tribunals, scholars argue that the prosecution of rapists following conflicts in Yugoslavia and Rwanda represented an important step towards documenting, quantifying, punishing, and quite possibly preventing rape (Gottschall 2004; Wachala 2012). Human rights advocacy groups spearheaded efforts to raise awareness on the issue of sexual violence in conflict and post conflict[5], though strategies to prevent or punish sexual violence in conflict vary and suffer from lack of political will, capacity of national governments or international tribunals, cooperation, and feasibility, in contexts that are often complex, evolving and difficult to assert control or structure.

[5] Enough Project, Human Rights Watch, Stop Rape Now, Free the Slaves, Global Witness, and other organizations have publications on this.

Research on violence against women highlights household, partner and individual attributes that decrease the likelihood of occurrence. Studies find that socioeconomic status, economic pressure, education levels of both husband and wife, alcohol/drug consumption, and household size and composition increase likelihood of violence against women (Awang and Hariharan 2011; Hoffman, Demo, and Edwards 2011; Jones et al. 1999; Saile et al. 2013; La Mattina 2017; Hynes et al. 2004; Michael, Hossain, and Mozumder 2011) . Recent intimate partner sexual violence studies internationally highlight several covariates that increase the likelihood of sexual violence: age, education levels (both partners), alcohol use, income, and family size (Hynes et al. 2004). Studies in East Timor, similarly following a conflict event, found that illiterate women were three times more likely to face sexual coercion (Hynes et al. 2004). In Rwanda, Thomson et al (2015) found rural residence, polygymous marriage, having no other adults in the household, having children, having a husband with a secondary education, and the woman having less than a secondary education were significantly associated with intimate partner sexual violence (Thomson et al. 2015). Their study covered various types of domestic violence, and also explored significant relationships between norms and gender based violence. Policies that may unassumingly erode some of these protective features described by these studies could have adverse impacts on violence against women by intimate partners.

Non partner sexual violence, is seen largely as indiscriminate. Indeed, research has shown few individual (victim) background factors significantly predicted non-partner sexual violence, apart from age (Peterman, Palermo, and Bredenkamp 2011). Though certainly, situational factors such as living in conflict zones or insecure places will likely increase risk. In the absence of reliable data on non-partner perpetrators of violence, and in cases of conflict where rape may become

less discriminate or predictable, community level attributes may be most appropriate way to incorporate perpetrator characteristics into models of sexual violence, as well as situational (environmental) characteristics.

Sexual Violence in DRC

Sexual violence in DRC has received considerable attention, as well as (claimed by many) not enough attention. Between 1996-2004, more than 36,000 rapes were reported in DRC (Horwood 2007, Schroeder 2005). Reports continued to climb, with MONUC reporting 14,000 new cases in 2005, 13,000 new cases in 2006, and in the first half of 2007, 4,500 rapes were reported, with 40% attributed to the national army (FARDC) (Baaz & Stern 2011) (Erturk 2008). Other studies and reports from non governmental organizations and health clinics and hospitals provide alternative estimates of the prevalence; a medicosocial support program reported treating 20,517 rape victims between January 2005-September 2007(Steiner et al. 2009), the International Rescue Committee reported having assisted over 40,000 rape survivors since 2003(Peterman, Palermo, and Bredenkamp 2011), and numerous qualitative studies and secondary analysis of hospital data provide further, and at times conflicting, estimates (Ohambe, Muhigwa, and Mamba 2005; Taback, Painter, and King 2008; Steiner et al. 2009; Longombe, Claude, and Ruminjo 2008; Harvard Humanitarian Initiative 2010; Pham, Vinck, and Weinstein 2010; Onsrud et al. 2008)

Country-wide, or even province-wide estimates have rarely been reported with the exception of Petermen, Palermo and Brekenkamp's analysis of 2007 Demographic Household Data, using the most recent census data. They find that between 1.69 million and 1.80 million women aged 15-

49 have a history of being raped, with the highest numbers coming from Orientale province, followed by North Kivu and Kasai-Orientale (Peterman, Palermo, and Bredenkamp 2011). Additionally, they report that from 2006 to 2007, 407,397 to 433,785 women reported having been raped. They conclude that other reports on sexual violence were in fact underestimations. Further, the authors highlight the fundamental flaw in using health and social program records, the problems in estimating rates without recent census data, and the need for survey data, given that a small portion of those surviving sexual violence seek medical treatment or support. Quantifying rates of sexual violence is increasingly complex in the Democratic Republic of Congo, for several reasons. The first, sexual violence remains stigmatizing, traumatic, and difficult for those who are victimized to come forward, not to mention there exists little incentive to unless needing health care or support services. For those who do not suffer medical complications or do not have access to psychosocial support, they are unlikely to "show up" in existing studies using these records. Furthermore, some forms of sexual violence, such as "systematic mass rape" or "national security rape" can often lead to the death of victims (Palermo and Peterman 2011; Enloe 2000). Second, the proliferation of programs and resources for survivors of sexual violence has led to important considerations about how this might distort knowing 'real' levels. Allocating resources, benefits or support to survivors can create an incentive for individuals and households to report sexual violence even in its' absence[6]. Furthermore, some scholars have claimed that by focusing so narrowly on sexual violence it may embolden combatants to continue to use this tool to attract attention and gain power (Bashwira et al. 2014). Finally, Wood writes that, "[…] the description of sexual violence as "widespread"

[6] Articles by researchers in DRC posing these questions are available here: http://foreignpolicy.com/2013/03/04/what-happened-in-luvungi/ http://www.womensmediacenter.com/women-under-siege/a-needed-controversy-over-sexualized-violence-in-democratic-republic-of-con

and "systematic" may reflect an organization's attempt to draw resources to document sexual violence (whatever its' actual level) rather than the frequency of incidents per se, or may reflect legal rather than social science concepts" (Wood 2009:133)

While Petermen et al's paper represented the highest figures among studies over a similar period, in 2008 Wakabi wrote in the Lancet World Report that rape was on the rise yet again following unrest in the eastern territories (Wakabi 2008). In 2009, Human Rights Watch reported that since 2008, sexual violence had doubled[7]. Governments and international organizations, in recent years, have described rape in the DRC as "endemic" and gender violence as "deeply rooted" and DRC as "the worst place to be a woman" (Latek 2014; Davis, Fabbri, and Alphonse 2014). In the effort to characterize, quantify, and clarify rates of sexual violence in the DRC, there has also been considerable qualitative work describing survivors and perpetrators, as well as the community, national and international systems that at best sustain if not perpetuate the problem of sexual violence, both intimate partner and non-partner. Several non-academic books have been published on sexual violence in the DRC, furthering the cause of advocacy groups leveraging the emotional appeals made by horrific stories of sexual violence and first person narratives of westerners traversing difficult and dangerous terrain in search of these stories. However, these accounts remain largely controversial given and contribute to dominant narratives that ignore larger historical, social, environmental, and economic issues that perpetuate this.

[7] https://www.hrw.org/report/2009/12/13/you-will-be-punished/attacks-civilians-eastern-congo

The design of Dodd Frank section 1502 aims to defund armed groups responsible for perpetrating the of sexual violence, though, scholars criticize this argument as well. First, non-partner sexual violence is being perpetrated by both militias or "rebel armies" as well as the national army. The FARDC (the army of the Congolese state) absorbed several, former rebel armies following the formal end to the war in 2003, but suffered from poor training, little discipline, and inability to both manage and regularly pay salaries. Baaz & Stern's study of members of members of the FARDC's motivations and reasoning for rape is particularly instructive (Baaz and Stern 2009). They conclude, using Enloe's framework, that two explanations of rape are prominently used by the military members they interview: 'good' rape (that which is about fulfilling sexual need or desire and being unable to pay as one might normally) and 'evil' rape (that which is about war, and congruent with Enloe's 'national security' or 'systematic rape' types) (Enloe 2000). Lack of professionalization or motivation for better behavior, including the problems with infrequent and insufficient salaries for soldiers features prominently in their analysis. Relationships soldiers form with women depend on an exchange of monetary and non-monetary gifts, and when soldiers are unable to do this, 'good' rape becomes an acceptable (within Baaz & Sterns' respondents) way of fulfilling what is considered a natural desire. A colonel interviewed, "[…] stipulated that 'rape is a problem of the organization of society' explaining that if there is no poverty and suffering, then there will be less rapes" (Baaz and Stern 2009:509). Furthermore, the historical antecedents of this predatory governance traces back to the Mobutu era and even further to the colonial era. Police and military continue to exploit the population through harassment, taxation, and violence against the civilian population, including sexual violence (Rackley 2006).

The link between sexual violence, conflict, and economics emerges prominently in a review of the literature. First, sexual violence occurs at higher rates during conflict, which allows for measurement of pre and post levels of sexual violence. In the case of the DRC, conflict has varied in intensity, scale, prevalence, location, cause and duration since the official end of the war in 2003, making a pre and post assessment complex. Furthermore, the absence of conflict does not guarantee the security and stability that may act as community-level protectors against sexual violence, or allow individuals to build up protective factors such as education and income. For armed groups, both the national army and rebel armies, living near mining communities and engaging in illegal taxation and exploitation of the local population, sexual violence becomes a likely extension of this extractive relationship. Military members responsible for sexual violence against civilians cite the role that poverty plays in relationships between civilians and the military. While greater emphasis has been placed on non-partner sexual violence, findings suggest that throughout DRC, the levels of intimate partner sexual violence is over twice that of comparable and neighboring countries (Petermen et al 2011: 1065). This finding further complicates the narrative of minerals driving conflict, which then produces sexual violence, as women in North Kivu were more likely to report both partner and non-partner sexual violence than in other areas.

Proponents of the Dodd-Frank Section 1502 policy instrument assume that conflict, in the case of the DRC, is the most important determinant of violence against women, thereby reducing conflict through reducing the financial means for continuing conflict will have the desired impact. However, because violence against women occurs with or without conflict, and is related to the larger socioeconomic situation facing these areas, the factors that drive violence against

women may persist or, in fact, be exasperated by the continuing complex and deteriorating circumstances produced by the economic shock of sanctions.

Artisanal Scale Mining

ASM Globally

Dodd Frank Section 1502 does not target the miners, instead it targets the market in which these minerals are traded in. Inevitably, it would not only be armed groups, benefitting from taxing miners, that would see their incomes dissipate, rather miners themselves would face even greater shocks to their incomes. Studies of artisanal mining communities highlight how this industry can provide relatively reliable incomes to families including secondary beneficiaries of the mining industry such as small shopkeepers (Andrew 2003; Barry 1996; Bebbington et al. 2008). In a country with low property rights, minimal service provision by the government, and few viable alternatives, some have described ASM as the, "safety net to support people and economies even under adverse circumstances" (Garrett 2014:401). Therefore shocks to income induced by changes in the prices of commodities, boycotts of minerals, or changes in mining policy have implications to household and community level dynamics.

Efforts to sanction or regulate similar industries in other countries have produced modest and at times negative results (Geenen 2011, Bangirach 2008, Maconachie 2009). Targeted sanctions like Section 1502 fall victim to improper targeting, inability or lack of motivation to enforce, and an overestimation of the benefits versus the costs of implementation and enforcement. Similar targeted sanctions have produced mixed results. The Kimberly Process Certification Scheme, a

product of consumer outrage, advocacy efforts, and targeted policies aimed at increasing traceability of "blood diamonds" failed to live up to the expectations of policy makers, which scholars attribute to the complexity of monitoring, lack of good governance, accountability and transparency, as well as the post-conflict context (Maconachie 2009).

ASM DRC

As a colony, the DRC was highly valued for its' vast mineral wealth and human resources which were exploited to inhumane and environmentally degrading lengths before independence. Since achieving independence, access to and control over natural resource wealth within the DRC between international, national, and local private and public actors has yielded differing and at times conflicting policies and incentives for different actors. In the years since independence, mining policy has varied from Mobutu Sese Seko's nationalization of all industries, to the current laws favoring industrial, large scale enterprise. Concessions are sold to large industrial enterprises with low tax rates, long-term rights, and little regulatory oversight. Conversely, artisanal miners have far less favorable terms, granted legal access to concessions categorized as "artisanal exploitation zones"(D'Souza 2007). These zones are determined to be unsuitable for industrial exploitation and thus, small scale miners are granted permission to use. However, should an industrial actor find it suitable, the concession can be sold and access restricted. In the DRC, the nature of coltan deposits are not conducive to large-scale, industrial mining therefore extraction is mostly done as artisanal or small scale mining (Garrett 2014). Armed groups, with a variety of leaders and aims, may not be mining themselves, but reportedly control 12 of the 13 major mines in the DRC. Funds are extracted from miners through taxes levied during the

transaction from miner to buyer, payment of 'protection fees', pillage, or through mineral transport check points (Garrett and Mitchell, 2009).

There are an estimated 5-12 million Congolese who are dependent on mining activities. ASM activities throughout DRC are estimated to make up about 80% of the entire mining sector production (D'Souza 2007). Studies on ASM in DRC point out that the conditions under which the miners work are unsafe, often employing children, environmentally destructive, and exploitative. Miners work in dangerous conditions, and communities surrounding mines regularly face public health threats and crisis due to extreme poverty(Maclin et al. 2017; Geenen 2012a; Garrett 2014). The relatively little capital ASM requires, the comparative flexibility of work as opposed to agriculture or fishing, and the way in which it can complement other forms of work make it an attractive option for those living in extreme poverty.

Mining in the DRC is a combination of both push and pull mechanisms, well characterized by Gennan (2012); the 'demand-pull' view posits that individuals engage in mining for the higher economic returns, while 'distress push' views mining a result of extreme poverty (Geenen 2012b). In the DRC context, the on and off conflict may have further pushed individuals towards mining through limiting agricultural activities and other forms of income generation. Agriculture activities rely on access to land, established and functioning land tenure systems, and not only security in the present time period, but belief that future periods will also be secure such that investments can be realized. Some studies of mining areas have even found that individuals engaged in occupations other than mining in mining areas are more likely to be living in poverty

than miners themselves (Bryceson and Jønsson 2010). Despite the dangerous conditions of mining, and the documented use of child labor in ASM activities worldwide, income from mining can otherwise improve health and education outcomes for women and children by generating greater disposable income and returns to activity without initially large capital investments. Unlike farming or starting a business, credit constrained individuals face few barriers to becoming artisanal or small-scale miners. This makes mining all the more attractive to people in extreme poverty, often prompting people to migrate towards mining opportunities, and sending money back to their families (Bashwira et al. 2014; Maclin et al. 2017).

Similar to Geenan's view of the push and pull mechanisms that motivate ASM, the same can be said of armed group financing; it is unclear to what extent armed groups rely solely on the activities of mining to finance operations. Importantly, UN reports (2010) note that extraction of coltan minerals is not the only way armed groups are funded, rather they exploit the timber trade, meat, illegal fishing, and poaching (UN 2010). Therefore reducing the prices or creating no market for DRC mining products may instead push armed groups towards more lucrative industries. The conflict minerals argument assumes that the only way in which these groups could possibly fund their activities are through controlling mines. This supposition neglects the other ways in which corruption, illegal taxation, reliance on other industries, and other forms of terrorizing the population may actually continue to fund armed groups (Johnson 2013). Furthermore, as Seay writes, conflict is caused by state weakness and inability to govern, not the presence or exploitation of minerals. Armed groups benefiting from these can find other ways to fund activities in an ostensibly lawless state(Seay 2012). The dominant narrative of conflict minerals is not without debate, as Autessere writes extensively about the evolution of how

mining came to be seen as the main cause of violence, and sexual violence as the most important consequence (Autesserre 2012). This simplifies the conflict and motivations of rebel armies and combatants. Armed groups' motivations for continued conflict extend beyond economic reasons, therefore security sector reform should be handled as a distinct issue than that of improving transparency and accountability in the mineral trade, as Seay aptly put, this task is solely an economic solution to an economic problem.

Channels for Legislation to Sexual Violence

Proponents of Dodd-Frank legislation propose that by cutting off funding to rebel armed groups, conflict will subside and with that, sexual violence will as well. First, we test the assumption that areas most affected by the *de facto* mining ban, following the passage of Section 1502, had significantly higher levels of sexual violence than those lesser affected (as in, mines that were not targeted, or provinces that were not targeted), or unaffected (gold mining areas in or out of the policy zone). Then, based on the above literature, we test the strength of the argument that rebel groups, funded by minerals, perpetuate sexual violence because of this funding. We predict that by decreasing the profitability of mining resources, armed groups may have less funds but will (a) perpetrate the same or greater levels of sexual violence, either in the context of increasing general violence and instability, and/or (b) force armed groups to relocate their activities to mining areas unaffected by the policy, maintaining the same or greater levels of sexual violence against the population in these areas. Finally, we explore whether or not there

were changes in counterfactual gold mining areas, that may signal a relocation of activities and with that, potentially increasing levels of sexual violence.

III. Data for Main Empirical Analysis

To describe and test for the effect of Dodd Frank on sexual violence, we create a data set from two publicly available sources. In this section we describe the data and key variables.

A. Outcome Variable: Sexual Violence

Data on sexual violence come from the Demographic and Health survey, first administered in 2007 and then again in 2013/2014. We use the individual recode, specifically using the responses of those randomly selected for the Domestic Violence module, and living in the eastern provinces of Katanga, Maniema, North Kivu, Orientale, and South Kivu. Figure 1 provides a map of DRC with the highlighted provinces of this study. The sample of women includes those who are currently married (52%) living with partner (14%) never married (23%) and widowed, divorced or separated (10%). DHS dataset includes covariate information, such as education level, income level, and age. The survey teams conducted multiple interviews within each area (village), and the data includes geo-coordinates of the enumerations sites randomly altered within a 10km radius for anonymity.

We test three outcome variables of sexual violence: (1) of ever married or currently married women, ever experienced intimate partner sexual violence (IPSV), (2) of all selected for the domestic violence module, and had an experience with any violence, ever experienced sexual violence (forced sex acts) by a non-partner, (NPSV) (3) of those who have experienced sexual violence by a non-partner, experienced sexual violence in last 12 months by a non-partner

(NPSV 12 mo). Importantly, we understand the estimates in this paper to be a closer estimate of sexual violence than those produced by programs or health centers, but still likely an underestimate given the stigmatization, trauma, and sensitivity of the subject. Additionally, by using both 2007 and 2013 data and matching to mine location, we are able to parse out temporal and spatial effects in our difference in differences model.

Table 1 summarizes all three outcomes and other relevant DHS variables used in this analysis. The means of the dependent variables are: 24.4%, 2.9%, and 12.8%, for intimate partner sexual violence, sexual violence in the last 12 months, and history of sexual violence, respectively.

B. Treated and Control Villages

Our analysis first uses data only from the eastern provinces, Orientale, North Kivu, South Kivu, Maniema and Katanga. We establish treatment and control and levels of treatment using distance and the parameters of the specific policies. First, we define a village as 'treated' if it has geo-coordinates within the spatial 'policy zone' targeted by the conflict mineral policies. That is, the space appearing on the U.S. State Department's Dodd Frank Section 1502 map of conflict mines and the three provinces subject to the mining ban implemented by the Congolese government. Second, intensity of treatment is modeled by treated DHS villages within 20 km of at least one 3T mine that was operating prior to Dodd Frank, as identified by the IPIS 2009 and 2010 mining location surveys. This distance was selected following the distance used in the literature on mining impacts and appropriate for working with DHS data given the 10km radius random error in DHS enumeration coordinates. The third parameter, is the year 2013, when the policy would have had greatest influence on our data (versus 2007, when it was not in effect). Figure 2 demonstrates the 'treatment' designation of all 201 DHS clusters in the eastern DRC, as well as

visualizing our counterfactual, control villages. We identify several counterfactuals for comparison:

- Villages within 20 km of a 3T mine, that were not included in the policy zone
- Villages without a 3T mine, that were included in the policy zone
- Villages within 20km of a gold mine, but outside the policy zone
- Villages within 20km of a gold mine, and were included in the policy zone.

Based on the policy and the fact that gold was de facto exempt from the Dodd Frank induced boycott, we do not anticipate that places with gold mines will experience any effects. However, we include in this model as a counterfactual, and also to explore the assumptions that groups may shift activities towards gold mining in the absence of profitable, viable 3T mining activities.

C. Control Variables

Non-partner sexual violence literature does not specify many covariates aside from geographic location or proximity to conflict. This is because this specific type of sexual violence appears indiscriminate, except in cases of systematic mass rape or national security rape when specific ethnic or religious groups are targeted (Enloe 2000). We include territories to test effects within territories. Based on the literature review, and prior studies of sexual violence in Congo, we include the following covariates: age, literacy and average community income indicators. We predict that younger respondents will have lower reported intimate partner sexual violence and history of sexual violence, though higher levels of sexual violence in the last 12 months. We predict, consistent with the literature, that higher literacy levels would decrease the likelihood of partner or non-partner sexual violence. Lastly, we use community income indicators instead of

individual indicators because non partner sexual violence is perpetrated not solely based on ones' own income, rather it is also related to the income or lack thereof of perpetrators.

IV. Main Empirical Analysis

In this section, we examine the impact of the Dodd Frank-induced boycott on sexual violence, both partner and non-partner.

Econometric Model and Sources of Information

To implement formal tests, we estimate a linear probability triple difference-in-difference regression model of the causes of sexual violence in eastern DRC. For each woman, *i*, in village *v*, located in territory, *t*, in province, *p*, during year, *y*, we estimate the probability the woman: (1) experiences intimate partner sexual violence, (2) experienced non partner sexual violence, and (3) experienced non partner sexual violence in the past 12 months. We estimate this probability of sexual violence as a function of whether the woman is living in a village that is "treated" by the Dodd Frank policy by being less than 20km from a 3T mine, $3TInd_v$, within the Dodd Frank Policy Zone, $PolicyZone_v$, after the passage of Dodd Frank in 2010, $PostDF_{yk}$. Because the law also potentially affects gold mines, we also include an indicator for whether there is a gold mine near the woman, $GoldInd_v$, which receives the same difference-in-difference treatment as the 3T mining village indicator.

To control for potentially confounding effects, we also include the covariates listed above, including literacy, $literacy_i$, age of respondent, age_i, average community income level, $comincome_v$, and fixed effects by territory.

Putting all of those variables and effects into an equation in their most general form produces the equation below.

$$
\begin{aligned}
sexualviolence_{ivtpy} &= \emptyset literacy + \mu comincome + \alpha literacy + \gamma territory + \beta_1 PolicyZone_v \\
&+ \beta_2 3TInd_v + \beta_3 (PolicyZone_v \; x \; 3TInd_v) + \beta_4 (PolicyZone_v \; x \; PostDF_{yk}) \\
&+ \beta_5 (3TInd_v \; xPostDF_{yk}) + \beta_6 (PolicyZone_v \; x \; 3TInd_v \; xPostDF_{yk}) \\
&+ \beta_7 (GoldInd_v) + \beta_8 (GoldInd_v \;\; PolicyZone_v) \\
&+ \beta_9 (GoldInd_v \; x \;\; PolicyZone_v \; x \; PostDF_{yk}) + \varepsilon_{ivtpy}
\end{aligned}
$$

The beta coefficients are of primary interest, particularly the β_6, which is the triple difference estimate of the policy treatment effect where β_6>0 implies Dodd Frank increased sexual violence in 3T mining villages within the policy zone.

V. Results

Testing the Targeting of Dodd Frank legislation

Table 2 displays the results of testing the means of the three sexual violence outcome variables in the respective policy zones. We find that respondents who are within the policy zone and live within 20km of a 3T mine, report higher levels of IPSV, NPSV, and NPSV in the last 12 months,

as of 2007 ($p<.01$). Furthermore, we find that respondents living within 20km of a 3T mine have statistically significantly greater reporting of NPSV, and NPSV in the last 12 months.

In Table 3, we show the results of regressions with and without territory fixed effects controls, just using the 2007 data to show targeting. We find that for all variables, without territory fixed effects, community income is the most significant predictor of all three sexual violence outcomes ($p<.05$). When including territory controls, we find that for IPSV, living within 20 km of a 3T mine negatively influences IPSV. However, when looking at places within 20km of a mine and in the policy zone, it positively influences IPSV, as does having a higher community income ($p<.05$). For NPSV in the last 12 months, we find the opposite effects among 3T Indicators; those living within 20km of a 3T mine have a higher risk, whereas those living within 20km of a 3T and in the policy zone have a lower risk in 2007 of NPSV in the last 12 months. This latter result suggests that if the purpose of the policy was to target zones with higher levels of NPSV, they chose a policy instrument that did not target the correct places, once one controls for covariates.

Difference in Difference Results

In Table 4 and Table 5 we present the results of our difference in difference models, with and without territories as well as with and without gold mine variables. We evaluate these to determine whether or not the changes in the treatment areas outcomes were attributable to the combined effect of the Dodd-Frank de facto boycott. We find that there is no significant negative effect on IPSV, NPSV, and NPSV in areas that are within 20km of a 3T mine, within a policy zone, and after Dodd Frank had been implemented. Year effects have the most significant, negative influence across all three outcomes, with the overall levels of IPSV, NPSV and long-

term NPSV declining in Eastern Congo. Additionally, being in a policy territory (Maniema, North Kivu, or South Kivu) had a statistically significantly positive effect on all three sexual violence outcomes.

Changes to Sexual Violence in Gold Mining Territories

We explore whether or not IPSV, NPSV, and NPSV in the last 12 months have increased in gold mining territories, using the same strategy in 3T territories. We find that IPSV increased post Dodd Frank legislation, in places within 20km of a gold mine ($p<.05$) as well as in villages post Dodd Frank legislation, in places within 20km of a gold mine, and in the policy zone ($p<.01$). Again, being in a policy zone (Maniema, North Kivu or South Kivu) statistically significantly increases the likelihood of facing IPSV, NPSV, or NPSV in the last 12 months ($p<.01$). Overall the conclusion is that gold mining areas are not statistically significantly different from non-gold mining areas with respect to IPSV and NPSV. The only significant differences are that post-Dodd-Frank there was a divergence of policy zone gold mining areas from non-policy zone gold mining areas with respect to IPSV, where the former had increases and the later had decreases.

VI. Discussion and Conclusion

Our results first, importantly, suggest that the areas in which the policy was most explicitly targeted, that is, areas that not only had a 3T mine but were included in the Mining Ban implemented by the Congolese government experience statistically significantly higher levels of IPSV, NPSV, and NPSV in the last 12 months. While this may, in some form, indicate proper targeting we must note that 3T mines, not included in Congolese state mining ban did not have statistically significantly higher means of all three forms of sexual violence. So therefore, we

may dispute the claim that the presence of a 3T mine within 20km necessitated a *de facto* boycott, given that only places within 20km of a 3T mine and within Maniema, South Kivu and North Kivu had significantly higher levels of sexual violence. Additionally, we found that community income was the only significant predictor of all types of sexual violence ($p<.01$) in 2007.

Our main empirical analysis, the difference-in-difference model, was to determine whether this change is attributable to the *de facto* mining ban. We find that being in Maniema, North Kivu, and South Kivu most significantly predict a higher likelihood of each sexual violence outcome ($p<.01$), as well as the year effect having a negative effect on the likelihood of each sexual violence outcome ($p<.01$). We take from this that the policy did not effectively reduce forms of non-partner sexual violence, that which is emphasized in both the policy language and advocacy sector, though it had some effects on IPSV. Instead, a decrease is largely attributable to a time fixed effect variable – that which we have not been able to further quantify or describe in our model.

We theorize there could be various reasons for this. First, we do not account for migration which we know to be a prevalent feature of Congolese life in the eastern provinces. Second, we are not including a conflict variable in this analysis, thereby not comparing the relative levels of conflict that may have occurred in 2007 versus 2013. Finally, a variable worth further exploration is the role of civil society, community and national organizations, as well as international organizations have played outside the policy sector in changing conditions and improving security. While some authors suggest that the greater attention on sexual violence in DRC may lead to combatants

further using sexual violence to gain the attention of the international community, it could be that the opposite has occurred: through greater attention towards sexual violence and, even, prosecutions of key figures, sexual violence has decreased.

IPSV has received less attention, though prior studies highlight it's comparatively higher rate in the DRC than neighboring countries (Peterman, Palermo, and Bredenkamp 2011). In both models, with and without territory fixed effects we find community income to have a significant effect on IPSV. Our findings suggest that higher community income creates higher rates of IPSV.

Finally, when exploring the ways in which the policy may have comparatively influenced rates of sexual violence in areas with gold mines, we find only effects for intimate partner sexual violence. If the minerals-conflict-sexual narrative violence, and furthermore, if groups profiting from taxation and pillage of areas that were boycotted during the de facto boycott relocated to gold mining areas, we would presume their patterns of sexual violence would be reconstituted in other communities. We cannot comment on whether or not, or to what extent groups relocated to gold mine areas. Our results suggest that there has been no such shift in sexual violence to other areas.

The decrease in sexual violence from 2007 to 2013 is hopeful, yet measurement and analysis of sexual violence data remains problematic given the nature of the subject, the difficulty in collecting reliable, valid and representative data, and in DRC, the complexity that migration, insecurity and conflict present in any analysis. This paper challenges the position, or dominant

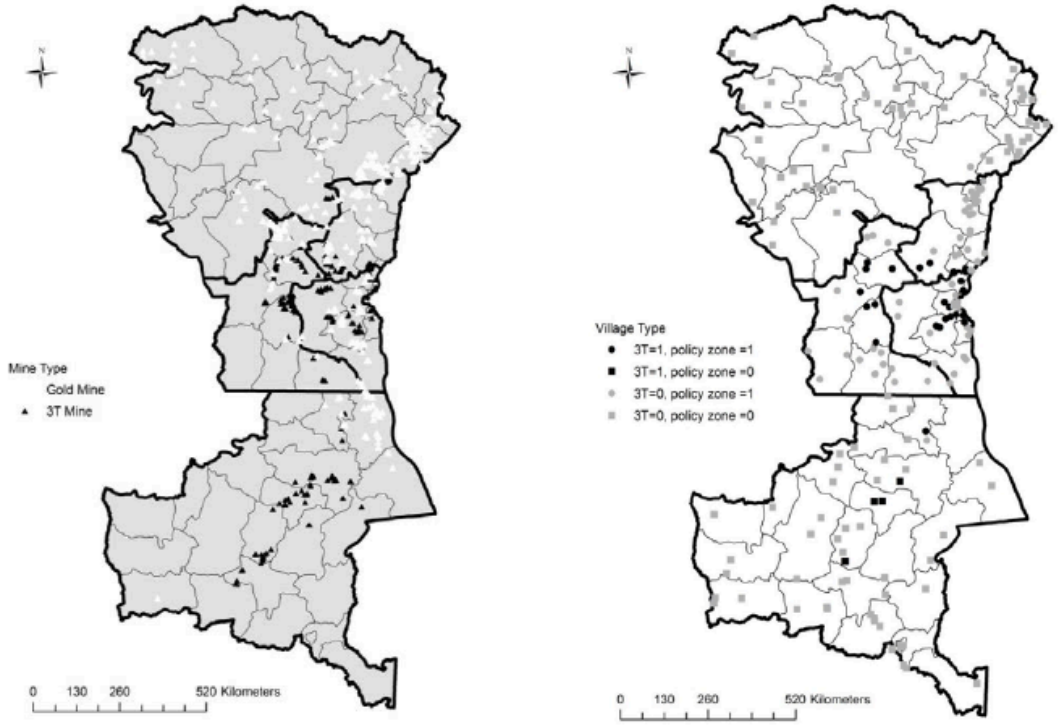
narrative, that sexual violence would be reduced if armed groups were unable to profit from minerals. Weaving together the strands of conflict, minerals and sexual violence may make for a simple story that can leverage powerful, emotional reactions, but it is not nearly as instructive for proper policy making. Our findings oppose the assertion that an economic policy instrument, specifically a targeted sanction, could change a social and/or security problem. The policy goals of transparency and accountability in an economic sector are certainly worthy aspirations, but these do not translate as neatly to gains against human rights violations like sexual violence. Just as armed groups operating in the DRC exist for and are driven by more than control over valued minerals, sexual violence is driven by more than the taxation or pillaging of mineral wealth.

Tables and Figures

Figure 1: Map of Democratic Republic of Congo, Study Areas

Notes: Adopted from Parker, Foltz, & Elsea 2016. The shapefiles for province boundaries come from www.gadm.org/about

Figure 2: Policy Zones



Notes: Adopted from Parker, Foltz & Elsea 2016. The dark colored lines outline the provinces of Katanga, Maniema, South Kivu, North Kivu, and Orientale. The light lines outline the 70 territories in these five provinces. The "Policy Zone" comprises the union of villages in provinces where mining was banned (i.e. Maniema, North Kivu, and South Kivu) and those with geo-coordinates falling within the U.S. State Department's Section 1502 map of conflict mining zones. The map is available at: https://hiu.state.gov/Products/DRC_MineralExploitation_2011June14_HIU_U357.pdf.

Source: The shapefiles on territory boundaries come from www.gadm.org/about. The geocoordinates of mining locations come from Spitaels and Hilgert (2008), Spittaels and Hilgert (2009), Spittaels (2010), and Spittaels and Hilgert (2010). The geocoordinates of villages come from the Demographic Health Survey data.

Table 1: Summary Statistics

Table 1: Summary Statistics

	Mean	St. Dev	Min	Max	Description
Intimate Partner Sexual Violence (IPSV)	0.244031	0.4295778	0	1	equals 1 if ever/currently married reporting SV
Non-Partner Sexual Violence, past 12 months (NPSV 12 mo)	0.029371	0.1688676	0	1	equals 1 if reported history of SV and reporting SV in past year
Non-Partner Sexual Violence (NPSV)	0.1282904	0.3344592	0	1	equals 1 if reported history of SV
Policy Zone	0.5194346	0.4996454	0	1	equals 1 if DHS village is in policy zone, otherwise 0
3T Indicator	0.1732379	0.3784704	0	1	equals 1 if 3T mine within 20 km of DHS village, otherwise 0
3T Indicator x Policy Zone	0.1515715	0.3586217	0	1	equals 1 if 3T mine within 20 km of DHS village and within policy zone, otherwise 1
3T Indicator x Policy Zone x Post Dodd Frank	0.0708574	0.2565983	0	1	equals 1 if 3T mine within 20 km of DHS village and post enactment of Dodd Frank, otherwise 0
3T Indicator x Post Dodd Frank	0.0838758	0.2772143	0	1	equals 1 if 3T mine within 20 km of DHS village and within policy zone and year is 2013, post enactment of Dodd Frank, otherwise 1
Gold Indicator	0.3577274	0.4793536	0	1	equals 1 if Gold mine is within 20 km of DHS village, otherwise 0
Gold Indicator x Policy Zone	0.2232658	0.4164544	0	1	equals 1 If Gold mine is within 20 km of DHS village and within policy zone, otherwise 1
Gold Indicator x Policy Zone x Post Dodd Frank	0.1096336	0.3124471	0	1	equals 1 if Gold mine is within 20 km of DHS village and post enactment of Dodd Frank, otherwise 0

Gold Indicator x Post Dodd Frank	0.1936954	0.3952113	0	1	equals 1 if Gold mine is within 20 km of DHS village and within policy zone and year is 2013, post enactment of Dodd Frank, otherwise 1
Age	27.96903	9.402619	15	49	age of woman interviewed
Literacy	0.994382	0.9391877	0	2	literacy level of woman interviewed, 0 being illiterate
Community Income	2.933978	1.061759	1	5	mean of income level observations within DHS village
Observations	10,754				total sample size
2007	4,019				# women surveyed in eastern provinces, 2007
2013	6,735				# women surveyed in eastern provinces, 2013
Selection for Domestic Violence Module					
2007	1,218				# women selected for domestic violence module, in eastern provinces, 2013
2013	2,007				# women selected for domestic violence module, in eastern provinces, 2008

Table 2: 2007 Means Testing of Outcome Variables Outside and Within Policy Zones

Table 2: Means Testing of Sexual Violence Variables Outside and Within Policy Zone

		Outside Zone		Within Zone		
		Mean	SD	Mean	SD	
Intimate Partner Sexual Violence	3T Indicator	0.2736954	0.4450921	0.3261649	0.4696509	
	3T Indicator x Policy Zone	0.2704918	0.4444416	0.3471074	0.4770369	***
	Gold 20 Indicator	0.2921013	0.4550679	0.2778793	0.4483636	
	Gold 20 Indicator x Policy Zone	0.2848629	0.4516184	0.2875989	0.4532415	
Non-Partner Sexual Violence, past 12 months	3T Indicator	0.0453564	0.208197	0.0929368	0.290885	***
	3T Indicator x Policy Zone	0.0479167	0.2137013	0.0893617	0.285874	***
	Gold 20 Indicator	0.0509745	0.2201108	0.0625	0.242291	
	Gold 20 Indicator x Policy Zone	0.0512821	0.2207072	0.0664894	0.2494675	
Non-Partner Sexual Violence	3T Indicator	0.1447084	0.3519967	0.2304833	0.3704458	***
	3T Indicator x Policy Zone	0.146875	0.3541658	0.2340426	0.4243026	***
	Gold 20 Indicator	0.1514243	0.358731	0.1799242	0.3844886	
	Gold 20 Indicator x Policy Zone	0.1501832	0.3574692	0.1941489	0.3960711	*

Notes: *p<.10; **p<.05; ***p<.01

Table 3: Sexual Violence Regressions, 2007

	Intimate Partner Sexual Violence		Non-Partner Sexual Violence, Last 12 Mo		Non-Partner Sexual Violence	
	(1)	(2)	(3)	(4)	(5)	(6)
Policy Territory	0.0946**	0.0115	0.0327*	0.11	0.0572*	-0.145
	(0.0372)	(0.283)	(0.019)	(0.135)	(0.0305)	(0.216)
3T Indicator	-0.00615	-0.417**	0.110***	0.339***	0.133*	0.256*
	(0.081)	(0.169)	(0.0424)	(0.0921)	(0.068)	(0.147)
3T Indicator x Policy Zone	0.0673	0.411**	-0.0749	-0.304***	-0.0649	-0.213
	(0.0888)	(0.177)	(0.0463)	(0.0962)	(0.0743)	(0.153)
Gold Indicator	0.021	0.0201	0.0295	-0.0243	0.0378	-0.459**
	(0.0441)	(0.284)	(0.0232)	(0.138)	(0.0373)	(0.221)
Gold Indicator x Policy Zone	-0.0808	0.0335	-0.0312	0.0561	-0.0277	0.596***
	(0.0557)	(0.29)	(0.029)	(0.142)	(0.0465)	(0.227)
Literacy	0.00391	-0.00233	-0.00279	0.00103	0.006	0.00553
	(0.0156)	(0.0158)	(0.00804)	(0.00822)	(0.0129)	(0.0131)
Age	-0.00078	-0.000156	-0.000992	-0.00133*	-0.000754	-0.00146
	(0.00149)	(0.0015)	(0.000784)	(0.000791)	(0.00126)	(0.00126)
Community Income	0.0305**	0.0829***	0.0139*	0.00957	0.0284**	0.0233
	(0.0138)	(0.0213)	(0.00714)	(0.011)	(0.0115)	(0.0176)
Territory Fixed Effects	No	Yes	No	Yes	No	Yes
Observations	1,211	1,211	1,190	1,190	1,190	1,190
R-squared	0.018	0.11	0.015	0.092	0.021	0.107

Notes: *p<.10; **p<.05; ***p<.01

Table 4: Difference in Difference Model

Table 4: Difference in Difference Model

	Intimate Partner Sexual Violence		Non Partner Sexual Violence, Last 12 Mo		Non-Partner Sexual Violence	
	(1)	(2)	(3)	(4)	(5)	(6)
Policy Zone	0.0440*	0.0352	0.00938	0.0133**	0.0217	0.0209
	(0.0242)	(0.03)	(0.00666)	(0.00653)	(0.0148)	(0.0167)
3T Indicator	-0.029	-0.0453	0.0798	0.086	0.0877	0.0963
	(0.0724)	(0.0766)	(0.0956)	(0.0956)	(0.0995)	(0.1)
3T Indicator x Policy Zone	0.0848	0.119	-0.0401	-0.0463	-0.00563	-0.0188
	(0.0844)	(0.0902)	(0.0978)	(0.0986)	(0.104)	(0.106)
3T Indicator x Post Dodd Frank	0.0741	0.0755	-0.0695	-0.0706	-0.0218	-0.0197
	(0.0815)	(0.0846)	(0.097)	(0.0971)	(0.105)	(0.105)
3T Indicator x Policy Zone x Post Dodd Frank	-0.129	-0.158	0.0254	0.025	-0.0295	-0.0319
	(0.0951)	(0.102)	(0.0995)	(0.101)	(0.112)	(0.115)
Gold Indicator		-0.0105		0.0195		0.0185
		(0.0473)		(0.0268)		(0.0406)
Gold Indicator x Policy Zone		-0.0291		-0.0162		0.00202
		(0.0569)		(0.0324)		(0.0482)
Gold Indicator x Post Dodd Frank		-0.0637		-0.000606		0.0217
		(0.0564)		(0.0279)		(0.0491)
Gold Indicator x Policy Zone x Post Dodd Frank		0.11		0.00218		-0.0126
		(0.0725)		(0.0342)		(0.0596)
Age	-0.00112	-0.00106	-0.000808***	-0.000848***	-0.000299	-0.000389
	(0.000872)	(0.000874)	(0.000292)	(0.000292)	(0.000632)	(0.000626)
Community income	0.0252**	0.0251**	0.00046	0.000549	0.0112*	0.0120*
	(0.0107)	(0.0107)	(0.00326)	(0.00319)	(0.00679)	(0.0067)
Literacy Level	-0.00371	-0.00376	0.000906	0.000809	0.00826	0.00816

	(0.00877)	(0.00874)	(0.00348)	(0.00344)	(0.00678)	(0.00673)
Year = 2013	-0.0518**	-0.0531	-0.0301***	-0.0292***	-0.0396**	-0.0422**
	(0.0248)	(0.0334)	(0.00883)	(0.00872)	(0.0159)	(0.018)
Observations	3,206	3,206	3,588	3,588	3,588	3,588
R-squared	0.014	0.017	0.02	0.021	0.015	0.017

Notes: *p<.10; **p<.05; ***p<.01

Table 5: Difference in Difference Model, with Territory Fixed Effects

Table 5: Difference in Difference Model, with Territory Fixed Effects

	Intimate Partner Sexual Violence		Non Partner Sexual Violence, Last 12 Mo		Non-Partner Sexual Violence	
	(1)	(2)	(3)	(4)	(5)	(6)
Policy Zone	0.163***	0.130***	0.0300**	0.0318***	0.0749***	0.0658***
	(0.0405)	(0.0443)	(0.012)	(0.012)	(0.021)	(0.023)
3T Indicator	-0.168*	-0.180*	0.0697	0.0787	0.0465	0.0471
	(0.0869)	(0.0961)	(0.0991)	(0.0984)	(0.0973)	(0.0967)
3T Indicator x Policy Zone	0.214**	0.243**	-0.0403	-0.0503	-0.0198	-0.0199
	(0.097)	(0.109)	(0.101)	(0.1)	(0.101)	(0.101)
3T Indicator x Post Dodd Frank	0.0621	0.0563	-0.0554	-0.0659	0.0278	0.0237
	(0.111)	(0.116)	(0.0889)	(0.0887)	(0.102)	(0.102)
3T Indicator x Policy Zone x Post Dodd Frank	-0.151	-0.186	0.0264	0.0378	-0.0409	-0.0416
	(0.117)	(0.128)	(0.0903)	(0.091)	(0.108)	(0.109)
Gold Indicator		0.018		0.0313		0.00462
		(0.0562)		(0.029)		(0.0443)
Gold Indicator x Policy Zone		-0.0333		-0.0171		0.0041
		(0.0668)		(0.0335)		(0.0522)
Gold Indicator x Post Dodd Frank		-0.133**		-0.0357		-0.0313
		(0.0567)		(0.0327)		(0.0501)
Gold Indicator x Policy Zone x Post Dodd Frank		0.196***		0.0198		0.035
		(0.0686)		(0.0385)		(0.0566)
Age	-0.00098	-0.000946	-0.000871***	-0.000868***	-0.000498	-0.000488
	(0.00087)	(0.00087)	(0.0003)	(0.0003)	(0.0006)	(0.0006)
Community income	0.0377***	0.0399***	0.00319	0.00408	0.0113	0.0122
	(0.0139)	(0.0142)	(0.00472)	(0.00465)	(0.00875)	(0.00876)

Literacy Level	-0.0101	-0.0104	-0.000724	-0.000936	0.00271	0.00251
	(0.00838)	(0.00831)	(0.00335)	(0.0033)	(0.00649)	(0.00647)
Year = 2013	-0.0576**	-0.054	-0.0382***	-0.0284***	-0.0649***	-0.0614***
	(0.0254)	(0.0342)	(0.00948)	(0.00923)	(0.0155)	(0.0182)
Observations	3,206	3,206	3,588	3,588	3,588	3,588
R-squared	0.069	0.074	0.045	0.046	0.06	0.06

Andrew, J S. 2003. “Potential Application of Mediation to Land Use Conflicts in Small- Scale Mining” 11: 117–30.

Autesserre, Séverine. 2012. “Dangerous Tales: Dominant Narratives on the Congo and Their Unintended Consequences.” *African Affairs* 111 (443): 202–22. doi:10.1093/afraf/adr080.

Awang, Halimah, and Sharon Hariharan. 2011. “Determinants of Domestic Violence: Evidence from Malaysia.” *Journal of Family Violence* 26 (6): 459–64. doi:10.1007/s10896-011-9380-6.

Baaz, Maria Eriksson, and Maria Stern. 2009. “Why Do Soldiers Rape? Gender, Violence and Sexuality in the DRC Armed Forces.” *International Studies Quarterly* 53 (2): 495–518. doi:10.1080/10402659.2012.732470.

Barry, Mamadou. 1996. “Regularizing Informal Mining: A Summary of the Proceedings of the International Roundtable on Artisanal Mining.” *The World Bank, Industry and Energy Department Occasional Paper No. 6*, 27.

Bashwira, Marie Rose, Jeroen Cuvelier, Dorothea Hilhorst, and Gemma van der Haar. 2014. “Not Only a Man’s World: Women’s Involvement in Artisanal Mining in Eastern DRC.” *Resources Policy* 41 (1). Elsevier: 109–16. doi:10.1016/j.resourpol.2013.11.002.

Bebbington, Anthony, Leonith Hinojosa, Denise Humphreys Bebbington, Maria Luisa Burneo, and Ximena Warnaars. 2008. “Contention and Ambiguity: Mining and the Possibilities of Development.” *Development and Change* 39 (6): 887–914. doi:10.1111/j.1467-7660.2008.00517.x.

Bleischwitz, Raimund, Monika Dittrich, and Chiara Pierdicca. 2012. “Coltan from Central Africa, International Trade and Implications for Any Certification.” *Resources Policy* 37 (1). Elsevier: 19–29. doi:10.1016/j.resourpol.2011.12.008.

Bryceson, Deborah Fahy, and Jesper Bosse Jønsson. 2010. “Gold Digging Careers in Rural East Africa: Small-Scale Miners’ Livelihood Choices.” *World Development* 38 (3). Elsevier Ltd: 379–92. doi:10.1016/j.worlddev.2009.09.003.

Business for Social Responsibility (BSR). 2010. “Conflict Minerals and the Democratic Republic of Congo,” no. May: 36. http://www.bsr.org/reports/BSR_Conflict_Minerals_and_the_DRC.pdf.

Cohen, Dara Kay, and Ragnhild Nordås. 2014. “Sexual Violence in Armed Conflict.” *Journal of Peace Research* 51 (3): 418–28. doi:10.1177/0022343314523028.

D’Souza, Kevin PCJ. 2007. “DRAF: Artisanal Mining in DRC (Key Issues, Challenges and Opportunities).” *Casm, Dfid, Wb*, no. Wardell Armstrong LLP (D’Souza) OS10032.

Davis, Laura, Paola Fabbri, and Ilot Muthaka Alphonse. 2014. “DRC - Gender Country Profile 2014.”

Enloe, Cynthia. 2000. *Maneuvers: The International Politics of Militarizing Women’s Lives*. 1st ed. University of California Press.

Foundation, Panzi, What Has Changed, Violence Victims, and Key Facts. 2016. “Dodd-Frank 1502 : Impact Update,” no. February.

García-moreno, Claudia, Henrica AFM F M Jansen, Mary Ellsberg, Lori Heise, Charlotte Watts, and Claudia Garcia-moreno. 2005. “WHO Multi-Country Study on Women’s Health and Domestic Violence against Women.” *Science* 310 (November): 1282–83. doi:10.1016/S0140-6736(06)69523-8.

Garrett, N. 2014. “Artisanal Mining and Conflict Financing in Eastern Democratic Republic of Congo (DRC); Coping, Conflict and Shadow Economy Actors and the Impact of the ’Conflict.” http://www.diss.fu-berlin.de/diss/receive/FUDISS_thesis_000000096345?lang=de.

Geenen, Sara. 2012a. “A Dangerous Bet: The Challenges of Formalizing Artisanal Mining in the Democratic Republic of Congo.” *Resources Policy* 37 (3). Elsevier: 322–30. doi:10.1016/j.resourpol.2012.02.004.

———. 2012b. “‘Who Seeks, Finds’: How Artisanal Miners and Traders Benefit from Gold in the Eastern Democratic Republic of Congo.” *European Journal of Development Research* 25 (2). Nature Publishing Group: 197–212. doi:10.1057/ejdr.2012.19.

Gobrecht, HD. 2011. “Technically Correct: Using Technology to Supplement Due Diligence Standards in Eastern DR Congo Conflict Minerals Mining.” *U. Ill. JL Tech. & Pol’y*. Vol. 1. http://heinonlinebackup.com/hol-cgi-bin/get_pdf.cgi?handle=hein.journals/jltp2011&section=18.

Gottschall, Jonathan. 2004. “Explaining Wartime Rape.” *The Journal of Sex Research* 41 (2): 129–36.

Harvard Humanitarian Initiative. 2010. “‘Now, the World Is without Me’: An Investigation of Sexual Violence in Eastern Democratic Republic of Congo.” *Harvard Humanitarian Initiative and Oxfam International*, no. April. http://www.oxfam.org/en/policy/now-world-without-me%5Cnhttp://www.oxfam.org/sites/www.oxfam.org/files/DRC-sexual-violence-2010-04.pdf%5Cnhttp://www.webcitation.org/6GeiwzVcX.

Hoffman, Kristi L, David H Demo, and John N Edwards. 2011. “Physical Wife Abuse in a Non-Western Society : An Integrated Theoretical Approach.” *Family Relations* 56 (1): 131–46. doi:10.2307/352709.

Hynes, Michelle, Jeanne Ward, Kathryn Robertson, and Chadd Crouse. 2004. “A Determination of the Prevalence of

Gender- Based Violence among Conflict-Affected Popula- Tions in East Timor Centers for Disease Reproductive Health Control and Prevention Response in Conflict Consortium." *Disasters* 28 (3): 294–321.

Jones, Alison Snow, Andrea Carlson Gielen, Jacquelyn C Campbell, Janet Schollenberger, Jacqueline A Dienemann, Joan Kub, and E Clifford Wynne. 1999. "Prevalence of Partner Abuse in." *Women's Health Issues* 9 (6): 295–305.

La Mattina, Giulia. 2017. "Civil Conflict, Domestic Violence and Intra-Household Bargaining in Post-Genocide Rwanda." *Journal of Development Economics* 124 (June 2015). Elsevier: 168–98. doi:10.1016/j.jdeveco.2016.08.001.

Laplante, Lisa J, and Samantha Lakin. 2017. "Sexual Violence During War and Peace : Gender , Power , and Post Conflict Justice : Gender , Power , and Post-Conflict Justice in Peru by Jelke Boesten (Review)" 39 (1): 260–66.

Latek, Marta. 2014. "Sexual Violence in the Democratic Republic of Congo." *European Parliamentary Research Service* November: i–i. doi:10.1136/bjo.2010.193169.

Longombe, Ahuka Ona, Kasereka Masumbuko Claude, and Joseph Ruminjo. 2008. "Fistula and Traumatic Genital Injury from Sexual Violence in a Conflict Setting in Eastern Congo: Case Studies." *Reproductive Health Matters* 16 (31): 132–41. doi:10.1016/S0968-8080(08)31350-0.

Maclin, Beth J., Jocelyn T.D. Kelly, Rachel Perks, Patrick Vinck, and Phuong Pham. 2017. "Moving to the Mines: Motivations of Men and Women for Migration to Artisanal and Small-Scale Mining Sites in Eastern Democratic Republic of the Congo." *Resources Policy* 51 (December 2016). Elsevier: 115–22. doi:10.1016/j.resourpol.2016.12.003.

Manhart, Andreas, and Tobias Schleicher. 2013. "Conflict Minerals – An Evaluation of the Dodd-Frank Act and Other Resource-Related Measures" 49 (August): 63.

Michael, a, Mian Bazle Hossain, and a B M Khorshed Alam Mozumder. 2011. "Women ' S Status and Domestic Violence in Rural Bangladesh : Individual- and Community- Level Effects." *Demography* 40 (4): 269–88.

Mthembu-Salter, Gregory. 2009. "Social and Economic Dynamics of Mining in Kalima, DRC."

Ohambe, Marie Claire Omanyondo, Jean Berckmans Bahananga Muhigwa, and Barnabe Mulyumba Wa Mumba Mamba. 2005. "Women's Bodies as a Battleground: Sexual Violence Against Women and Girls During the War in the Democratic Republic of Congo." *International Alert*. http://www.international-

alert.org/sites/default/files/publications/women's-bodies-as-a-english.pdf.

Onsrud, Mathias, Solbjørg Sjøveian, Roger Luhiriri, and Dennis Mukwege. 2008. "Sexual Violence-Related Fistulas in the Democratic Republic of Congo." *International Journal of Gynecology and Obstetrics* 103 (3): 265–69. doi:10.1016/j.ijgo.2008.07.018.

Palermo, Tia, and Amber Peterman. 2011. "Undercounting, Overcounting and the Longevity of Flawed Estimates: Statistics on Sexual Violence in Conflict." *Bulletin of the World Health Organization* 89 (12): 924–25. doi:10.2471/BLT.11.089888.

Parker, Dominic P, Jeremy D Foltz, and David Elsea. 2017. "Journal of Law & Economics."

Parker, Dominic P, and Bryan Vadheim. 2014. "No Title," no. June.

Peterman, Amber, Tia Palermo, and Caryn Bredenkamp. 2011. "Estimates and Determinants of Sexual Violence against Women in the Democratic Republic of Congo." *American Journal of Public Health* 101 (6): 1060–67. doi:10.2105/AJPH.2010.300070.

Pham, Phuong Ngoc, Patrick Vinck, and Harvey M. Weinstein. 2010. "Human Rights, Transitional Justice, Public Health and Social Reconstruction." *Social Science and Medicine* 70 (1). Elsevier: 98–105. doi:10.1016/j.socscimed.2009.09.039.

Rackley, Edward B. 2006. "Democratic Republic of the Congo: Undoing Government by Predation." *Disasters* 30 (December): 417–33.

Rustad, Siri Aas, Gudrun Østby, and Ragnhild Nordås. 2016. "Artisanal Mining, Conflict, and Sexual Violence in Eastern DRC." *Extractive Industries and Society* 3 (2). Elsevier Ltd.: 475–84. doi:10.1016/j.exis.2016.01.010.

Saile, Regina, Frank Neuner, Verena Ertl, and Claudia Catani. 2013. "Prevalence and Predictors of Partner Violence against Women in the Aftermath of War: A Survey among Couples in Northern Uganda." *Social Science and Medicine* 86. Elsevier Ltd: 17–25. doi:10.1016/j.socscimed.2013.02.046.

Seay, Laura E. 2012. "What ' S Wrong with Dodd- Working Paper 284 January 2012." *CEGA*, no. January.

Skelsbaek, Inger. 2001. "Sexual Violence and War: Mapping Out a Complex Relationship." *European Journal of International Relations* 7 (2): 211–37.

Snyder, C. S., W.J. Gabbard, J.D. May, and Nihada Zulcic. 2006. "On the Battleground of Women's Bodies: Mass Rape in Bosnia-Herzegovina." *Affilia: Journal of Women and Social Work* 21 (2): 184–95. doi:10.1177/0886109905286017.

Steiner, Birthe, Marie T Benner, Egbert Sondorp, K Peter Schmitz, Ursula Mesmer, and Sandrine Rosenberger. 2009. "Sexual Violence in the Protracted Conflict of DRC Programming for Rape Survivors in South Kivu." *Conflict and Health* 3 (1): 3. doi:10.1186/1752-1505-3-3.

Taback, N., R. Painter, and B. King. 2008. "Sexual Violence in the Democratic Republic of the Congo." *JAMA: The Journal of the American Medical Association* 300 (6): 653–54. doi:10.1001/jama.300.6.653.

Thomson, Dana R., Assiatou B. Bah, Wilson G. Rubanzana, and Leon Mutesa. 2015. "Correlates of Intimate Partner Violence against Women during a Time of Rapid Social Transition in Rwanda: Analysis of the 2005 and 2010 Demographic and Health Surveys." *BMC Women's Health* 15 (1). BMC Women's Health: 96. doi:10.1186/s12905-015-0257-3.

Trenholm, J. E., P. Olsson, and B. M. Ahlberg. 2011. "Battles on Women's Bodies: War, Rape and Traumatisation in Eastern Democratic Republic of Congo." *Global Public Health* 6 (2): 139–52. doi:10.1080/17441690903212065.

Wachala, Kas. 2012. "The Tools to Combat the War on Women's Bodies: Rape and Sexual Violence against Women in Armed Conflict." *International Journal of Human Rights* 16 (3): 533–53. doi:10.1080/13642987.2011.603952.

Wakabi, Wairagala. 2008. "Sexual Violence Increasing in Democratic Republic of Congo." *Lancet (London, England)* 371 (9606): 15–16. doi:10.1016/S0140-6736(08)60051-3.

Wimmer, Sarah Zingg, and Filip Hilgert. 2011. "Bisie: A One-Year Snapshot of the DRC ' S Principal Cassiterite Mine," 1–14.

Wood, Elisabeth Jean. 2009. "Armed Groups and Sexual Violence: When Is Wartime Rape Rare?" *Politics & Society* 37 (1): 131–61. doi:10.1177/0032329208329755.