



# Structural change and wife abuse: A disaggregated study of mineral mining and domestic violence in sub-Saharan Africa, 1999–2013



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## ABSTRACT

Mineral mining may be a mixed blessing for local communities. On the one hand, extractive industries can be a positive economic driver, generating considerable revenues, and opportunities for growth. On the other hand, mining is often thought to be associated with negative effects, such as pollution, and violent conflict. Existing research has shown that mine openings trigger a structural change in employment patterns in Africa, whereby women shift from agricultural work to the service sector, or leave the labor force. However, few if any systematic studies have addressed whether this structural shift may impact the level of violence within the household. Drawing on various versions of resource theory, we argue that mining – through such structural change – may increase women's risk of being abused by their partners. Recent advances in the literature on domestic violence (DV) suggest that prevailing gender norms moderate effects of resources. We test this empirically by matching georeferenced data on openings and closings of 147 industrial mines to individual data on abuse for up to 142,749 women from the Demographic and Health Surveys in 15 sub-Saharan African countries. We find no overall statistically significant effect of mine openings on the risk of partner abuse, although there are heterogeneous effects across countries. Furthermore, mining is associated with increased DV in areas with higher general acceptance of such abuse.

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## 1. Introduction

The extractive industry worldwide is undergoing unprecedented changes, with high volatility of commodity prices and rising exploration costs. In Africa, mineral mining has been going on since long before the colonial period, with substantial production of iron, copper, gold and salts. Today, the continent is home to about 30 percent of the world's total mineral reserves and even a higher share of deposits of diamonds, vanadium, manganese, platinum, cobalt and gold. Overall, Africa produces more than sixty different metal and mineral products, and has a huge potential with respect to mineral reserves exploration and production. (African Development Bank, 2012). By 2020 it is expected that only 4–5 countries in SSA will not be engaged in mineral resource extraction of some sort (World Bank, 2015).

On the positive side, extractive industries can be a significant driver of the economy, generating revenues, jobs and opportunities

for growth and development (e.g. Wise & Shtylla, 2007). Conversely, several studies indicate that natural resource extraction is often associated with violent conflict and poor economic performance (see e.g. Buhaug & Rød, 2006; Mehlum, Moene, & Torvik, 2006; Ramutsindela, 2013; Ross, 2015). Less attention has been paid to how natural resource extraction is related to crime, urban violence, social conflicts, and intimate partner violence in the local communities where the extraction takes place. Evidence from case studies indicates that the mining zones can indeed be a very hostile climate for women in general. For example, in a study of mining in Tanzania 90 percent of the girls interviewed felt threatened by abuse, neglect, or domestic violence (ILO, 2007).

Violence against women is considered to be one of the world's most pervasive human rights violations, and domestic violence, is by far its most important component (Garcia-Moreno, Jansen, Ellsberg, Heise, & Watts, 2006; Heise & Kotsadam, 2015).<sup>1</sup> Cross-country evidence from WHO suggests that lifetime prevalence

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<sup>1</sup> Although gender-based violence (including domestic violence) can also target men we focus in this article on domestic violence that targets females and is perpetrated by men.

rates of various forms of intimate partner violence (including sexual abuse) range from 15 to 71 percent across countries (García-Moreno et al., 2006, p. 1937). In sub-Saharan Africa the prevalence of intimate partner violence ranks particularly high, even compared to other developing regions (McCloskey, Williams, & Larsen, 2005).

The topic of domestic violence (DV), or sexual violence more broadly for that sake, has been poorly covered within the field of political geography. As noted by Pain (2015, p. 64), 'this is unexpected in a discipline with a core interest in how spaces, places and scales produce and reproduce a whole range of social and political phenomena'. While the country-level effects of extractive industries are fairly well explored, the research on their local economic and social effects is scarce. In particular, there has been a lack of research on the impacts of mining and the mining industry on women (Jenkins, 2014).

Ross (2015, p. 253) recommends that more research should investigate the effects of natural resources on the status of women. It is widely held that one of the artifacts of the arrival of large scale mining, and the shift from subsistence agriculture to cash economies, is increased violence against women (Jenkins, 2014, p. 334). On the other hand, Tolonen (2016) finds that openings of gold mines in Africa are associated with decreased acceptance of abuse. However, while we know that attitudes towards abuse are an important mediator for violence against women, we also know that acceptance is a poor proxy for abuse in the sense that underlying factors are often not similarly correlated with the two (Cools & Kotsadam, 2015). To the best of our knowledge the direct effect from large scale industrial mining to partner abuse has not been tested. The current paper aims to fill this research gap. Our study is guided by the following research question: *Does mining increase domestic violence in sub-Saharan Africa, and if so, why?*

The central part of our study is the often abrupt societal change that is associated with the opening of a mine. This complements the conceptualization of domestic violence as an integrated aspect of local societies (Hume, 2008). Within feminist political geography, domestic violence is increasingly understood as a 'part of broader social, political, and economic processes that are embedded in state policies, public institutions, and the global economy' (Giles & Hyndman, 2004, p. 4). Our study taps into these wider debates by capturing the local dynamics in economies that develop around mine zones and how this may impact violence in the home.

Existing research has shown that mine openings trigger a structural shift in employment patterns in Africa, whereby women shift from agricultural work to the service sector, or out of the labor force. Drawing on theories on employment, resources and domestic violence, we argue that mining – through such structural change – increases women's risk of being abused by their intimate partners. In addition to theories related to employment and the distribution of resources we discuss other contextual factors assumed to mediate or moderate the effect mining has on DV. In particular, we examine the role of prevailing gender norms in society, which is argued to moderate the relationship between resources and DV (Cools & Kotsadam, 2015).

Our study is also informed by ongoing debates about asymmetrical power relations that tend to position women as subordinate to men across space and time (e.g. Fluri, 2015; Hyndman, 2004). For example, the so-called 'gendered resource theory' posits that the effect of relative resources is contingent on the husband's gender attitudes concerning the degree to which men

hold breadwinner ideals and/or accept wife abuse (Atkinson, Greenstein, & Lang, 2005; Krishnan et al., 2010).

In order to test the extent to which mining<sup>2</sup> affects abuse we match longitudinal production data on 874 industrial mines in Africa from The Raw Materials Database (SNL Metals & Mining, 2014) to household survey data from Demographic and Health Surveys for women aged 15–49, spanning over two decades using spatial information. This unique combination of datasets with more than 500,000 sampled women in 25 countries enables us to investigate the local effects of industrial mining on domestic violence by a difference-in-difference method. By exploiting the spatial and temporal variation in the data, we compare women living close to a mine with those living further away, and individuals living close to a producing mine with those who live in the vicinity of a mine that is yet to open. We include country fixed effects and thereby control for time-invariant differences between countries such as time-stable mining strategies, institutions, trade patterns, openness, sectoral composition, level of economic development, and gender norms.

For the whole sample, we find no statistically significant effect of mine openings on partner abuse. However, there seems to be heterogeneity in the effects whereby mining is associated with elevated risks of DV in areas with higher pre-existing acceptance of abuse. Finally, there are clear differences in effects across countries. We explore this further with a discussion of two countries where mining has shown opposing effects with regard to domestic violence, Zambia and Tanzania.

The remainder of the paper proceeds as follows: The next section provides a brief literature review and presents a conceptual framework for analyzing the relationship between mineral mining and domestic violence. The third section presents the data and research design. The fourth section presents our findings, and the final section concludes.

## 2. Structural change: Trajectories from mining to domestic violence

There is extensive spatio-temporal variation in terms of intimate partner violence in Africa, both across and within countries, suggesting that it is indeed a product of the local context (Cools & Kotsadam, 2015; Østby, 2016). Why should large scale industrial mining increase the level of violence among intimate partners? In order to tackle this question we explore how natural resources, and the associated structural change from subsistence farming to cash economies, may impact family dynamics and local communities. Ross (2008; 2012) argues that an increase of oil resources leads to less female employment since the petroleum revenues tend to crowd out low-wage and export-oriented factories (such as the textile industry) where women mainly work. However, these studies focus on petroleum resources. Hence, studies looking at women's employment and status in relation to other resources are needed (Norris, 2009; Ross, 2009). We start by reviewing theories that are linked to employment and then move on to discuss other factors.

### 2.1. Factors related to employment

In sub-Saharan Africa, the growth of the mining industry is producing a structural change in the economy whereby subsistence farming becomes less important for both men and women. The growth of the extractive industry often implies the conversion of new land to new uses – either for mining as such, or for supporting infrastructure (roads, ports, housing, clinics, offices etc.), which can imply the loss of subsistence agriculture (Eftimie, Heller, & Strongman, 2009). Moreover, extractive industries create new

<sup>2</sup> The mining sector is remarkably diverse. Yet, as a first, general test of the mining-domestic violence nexus, we focus on the overall effect of *all* types of industrial mining in this study.

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