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## Still Tools of Repression? Re-Assessing the Effect of Arms Imports on Physical Integrity Rights

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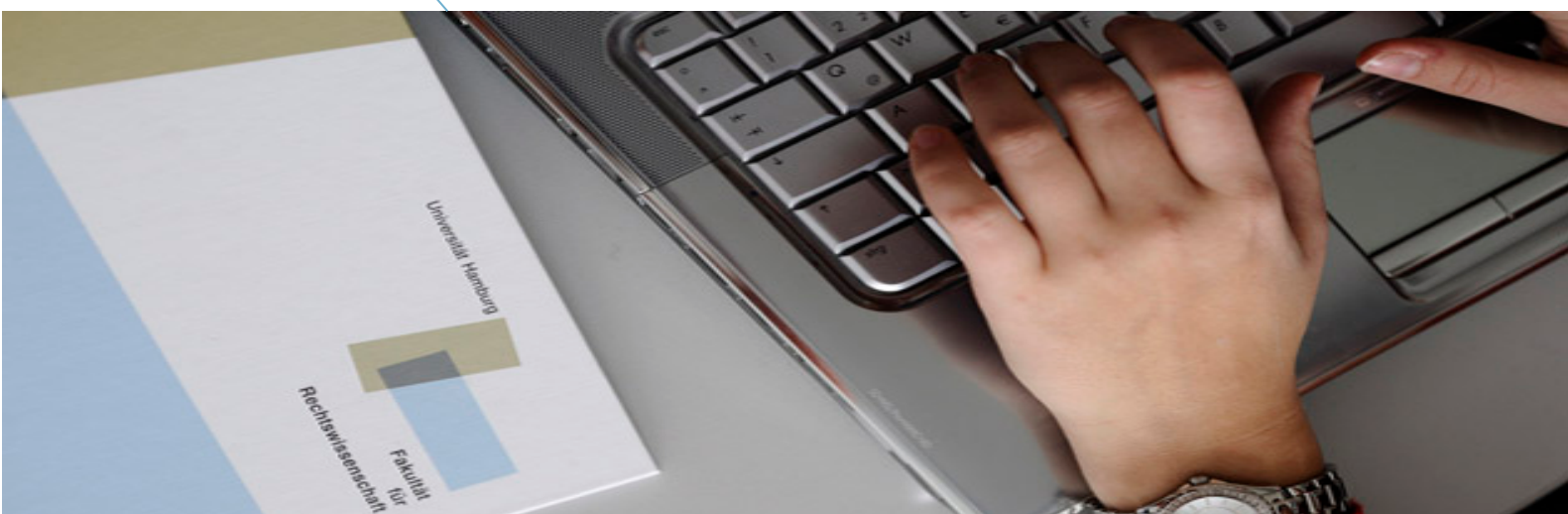
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# STILL TOOLS OF REPRESSION? RE-ASSESSING THE EFFECT OF ARMS IMPORTS ON PHYSICAL INTEGRITY RIGHTS

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# STILL TOOLS OF REPRESSION?

## RE-ASSESSING THE EFFECT OF ARMS IMPORTS ON PHYSICAL INTEGRITY RIGHTS

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### 1. Abstract

Small arms and light weapons (SALWs) imports have been found to be linked to a worsening of human rights conditions in the importing state. In this paper, we re-examine the relationship of government's SALW imports and the decision to engage in violations of physical integrity rights using updated and more reliable repression data as well as proposing a different estimation strategy. Analyzing physical integrity rights violations and SALW imports of 176 countries from 1991 to 2010, empirical results indicate that SALW imports have a negative impact on respect for physical integrity rights. When disaggregating findings by regime type, we find that SALW imports in autocracies are associated with more repression, while we have mixed results for democracies.

**Keywords:** arms trade, SALW, repression.

**JEL classification:** F14, H56, K33.

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## **2. Introduction**

The trade of small arms and light weapons (SALW) is heavily criticized for fueling conflicts and facilitating violations of human rights world-wide. This type of weapons is defined as portable weapons which can be used by a single person. Several non-governmental organizations (NGOs) campaign for a stricter arms trade regime arguing that small arms and light weapons (SALW) are used to commit human rights abuses. According to (Amnesty International 2010), approximately 60% of all human rights violations between 1991 and 2002 involved the use of SALW. The Arms Trade Treaty (ATT), which is the first international agreement that specifically addresses the trade of SALW, has thus been especially embraced by NGOs. But do arms imports actually lead to an increase in physical integrity rights violations? In only two studies, the assessment of the relationship between arms imports and physical integrity rights violations is based on systematic cross-country empirical analyses over time. This renders this aspect of the often controversially discussed arms trade and human rights nexus clearly under-researched. The aim of this paper is to re-investigate whether arms imports can in fact be associated with changes in respect for physical integrity rights.

Two papers assess the effect of arms imports on respect for physical integrity rights. While Blanton (1999) focuses on imports of arms to developing countries, De Soysa, Jackson and Ormhaug (2010) put an emphasis on SALW imports irrespective of development status. Both of the two previous studies contend that arms imports lead to an increase in physical integrity rights violations (De Soysa, Jackson, and Ormhaug 2010; Blanton 1999). Their argumentation is based on the claim that the import of arms provides the capability for engaging in violent and repressive action (Blanton 1999). Both studies find that arms imports are associated with a decrease in respect for physical integrity rights. SALW differ from conventional weapons such as aircrafts and missiles in

size, handling, and price. However, physical integrity rights are most often found to be violated by the use of SALW. Although violations of physical integrity rights usually only occur at a later stage of repression when conflict is escalating, it is the most severe form of human rights violations and therefore deserves special attention by research. We follow the empirical approach by De Soysa, Jackson and Ormhaug replicating their findings and re-examining the effect of SALW imports on repression with a new measure for physical integrity rights repression.

Using the replication data set provided by De Soysa and co-authors we extend their analysis in two ways: First, we take advantage of a new latent variable for respect for human rights which has been suggested by (Fariss 2014) for its increased reliability. Second, we extend the period of observation from 1991 to 2010 and test the effect of a change in arms imports on respect for physical integrity rights for a larger panel of up to 175 countries. We find that the result that SALW imports decrease respect for human rights achieved by De Soysa et al. is robust to our changes in data and empirical strategy. We, however, fail to replicate the diverging result for autocracies compared to democracies at least in one model specification.

The remainder of this paper is structured as follows. Section 2 provides the theoretical framework for why we expect arms imports to influence respect for physical integrity rights. The third section presents our research design, i.e. data, operationalization, and estimation method. In section 4, we show our empirical results, provide further robustness checks, and discuss our findings. Section 5 provides a conclusion to the analysis of whether arms imports influence respect for physical integrity rights.

### **3. The link between SALW imports and respect for physical integrity rights**

This section presents a theoretical framework of how arms imports are related to a change in human rights standards. According to theoretical considerations by Blanton (1999) and De Soysa, Jackson and Ormhaug (2010), arms imports lead to a decrease in respect for physical integrity rights because of the most straightforward explanation that arms can be and are used for this purpose. Weapons imports are a sign of militarization and of enhancement of military capabilities. We acknowledge this as a potential promoting factor and integrate it into Wintrobe's (1998) standard model of dictatorship and repression. Our theory section is divided in two parts. The first part briefly lays out the baseline model of repression according to (Wintrobe 1998). The second part of this chapter presents our argument how arms imports are be related to human rights violations.

Political leaders are rational individuals who decide between two strategies of staying in power and are interested in maximizing personal consumption. In other words: The primary objective of the incumbent is to stay in political power at the lowest resource cost possible so that his private consumption is maximized. To achieve this objective, the incumbent trades off the use of the following two strategies which can both facilitate survival in office, but also generate costs. The first strategy involves the use of repression which often takes the form of physical integrity rights violations such as torture and extrajudicial killings (Wintrobe 1998; Poe and Tate 1994). A restriction of these rights requires, for instance, expenditure costs of repression and is expected to increase a dissident's cost of mobilizing against the regime and thus deter the opposition from challenging the political survival of the incumbent. Wintrobe (1998) also discusses loyalty as another strategy: autocrats can buy and accumulate loyalty of their population, for instance, by distributing rents and other economic benefits. The level of repression

and the level of loyalty supplied by the population are dependent on one another. A fall in the level of loyalty to the autocrat is expected to provoke a reaction of the autocrat. Either the autocrat increases the level of rent distribution or the level of repression. High levels of repression, however, will lead to a reduction in loyalty towards the autocrat (Wintrobe 1998). This induces a negative spiral of dissent and repression. The more the incumbent relies on repression the harder the way back to non-violent forms of conflict resolution - without having to fear losing political power. The price of loyalty may become prohibitively high because citizens will hold the regime accountable for human rights violations. In order to prevent this, repressive regimes invest a lot in cover up for their rights violations.

The capacity for systematic repression is strongly linked to militarization of the state and, in particular, of police forces and secret services. A regime which has more resources available for repression has lower costs of immediate implementation of repressive measures (Davenport 1995). The higher the perceived threat of being ousted is to the incumbent the more a political leader will invest in his security forces, not only in terms of personnel, but also in terms of weapons available to these forces. In order to deter dissent effectively, repression has to be carried out in a systematic manner. Once repression is implemented systematically, it is very likely that it is cast in some sort of bureaucracy such as the former East Germany's Ministry of State Security ("Stasi") or the Chilean National Intelligence Directorate DINA (Davenport 1995). Later on, the incumbent regime and their human rights violating security forces are dependent on each other. On the one hand, a repressive regime is caught in the necessity to repress dissent, when it wants to stay in power and has no longer the means to switch to loyalty buying. Thus, the political leader is dependent on the loyalty of their security forces, requiring large investments to make sure this loyalty remains. The availability and possibility to use up to date high tech weapons instead of old equipment may be

considered a status symbol by security personnel. Thus, buying new weapons instead of using the stock may be used to buy loyalty of the security services to the incumbent. There may also be situations in which an incumbent sees the necessity to diversify the security forces in order to keep each of them deterred from overthrowing him themselves. In such a situation the demand for military equipment rises in order to equip the different branches of the security apparatus equally.

Members of the security forces, on the other hand, who are the ones who violated physical integrity rights, face prosecution when the incumbent regime collapses. In addition, being part of the security forces gives the members of the security forces the opportunity to extract rents for themselves. Therefore, they will work on their own militarization to prevent the regime from collapsing in order to be able to continue to extract resources. Davenport argues that path dependency can be expected when state coercion is cast in bureaucratic structures. These bureaucracies work on their own stabilization and access to resources by becoming more and more watchful of dissident behavior and sensitizing the regime to it (Davenport 1995). The security forces will become their own lobby arguing that a threat is constantly high and thereby securing their own existence and access to resources. The result is that the incumbent is constantly investing in the militarization of his security forces, because he overstates the risk of losing office. Consequently, the demand for SALW increases the more repressive a regime is.

Previous empirical findings show that the level of repression increases in the light of conflict (Davenport, Moore, and Armstrong 2008; Davenport 2007a; Davenport 2007b; Davenport, Armstrong, and Lichbach 2005; Davenport 1995). Davenport analyses the link between dissent and repression as follows: when dissent becomes violent, the probability of state repression increases, while non-violent dissent is less likely to provoke a violent



reaction (Davenport 1995). Hence, increasing dissent is followed by increasing repression, especially, when dissent activities become more violent or systematic. In reaction to the challenge to the regime it is militarizing its security forces, thus imports of SALW increase.

Whether imported arms are used for rights violations depends on regime type. It is widely established that in autocracies costs for neglecting the promotion and protection of physical integrity rights is relatively low compared to democratic regimes (Davenport 2007a; Davenport 2007b; Cingranelli and Richards 1999; Poe and Tate 1994). One aspect, which contributes to lower costs of repression for autocratic regimes is that state coercion is less likely to be sanctioned, at least as long as the regime is in power. Thus, the use of SALWs for physical integrity rights violations is less likely to be sanctioned in autocratic regimes. Democracies, by contrast, have a higher tolerance towards dissident behaviour as well as they are in general more legitimate forms of governments (Davenport 1995). They are less threatened by low levels of dissent and therefore do not react with repression. The reason is that democracies have found other ways of resolving conflicts (Carey 2010; Davenport 1995; Poe and Tate 1994; Henderson 1991). The use of weapons, as a reaction to dissent activities and conflict, is generally not accepted in democracies and democratic leaders are unlikely to be re-elected when repression as reaction to dissent becomes known.

Due to the nexus that political conflicts are more likely to result in violence, autocratic regimes also have more incentive to restrict private weapon ownership. In democracies a larger share of imported SALW will end up in the hand of citizens for private use such as hunting or sports than in autocracies. Although a higher diffusion of weapons is likely to increase the severity of violence and crime, both in democracies and autocracies, and therefore leads to an increased necessity to equip police forces

accordingly, we do not expect that respect for physical integrity rights decreases with SALW imports in democracies to the same extent it as does in autocracies (De Soysa, Jackson, and Ormhaug 2010; Efrat 2010; Cukier 2002; Muggah and Batchelor 2002). It is thus more likely that small arms are used for physical integrity rights violations in autocratic regimes, while this is unlikely to be the case in democracies. Our argument can be summarized with the following hypothesis, which we will test in the remainder of the paper:

*An increase in arms imports leads to a decrease in respect for physical integrity rights in autocracies, but not in democracies.*

#### **4. Data and empirical analysis**

In brief, our estimation approach consists of first replicating the results of (De Soysa, Jackson, and Ormhaug 2010) and second in suggesting improvements in the empirical strategy and data: As a first step, we introduce a novel physical integrity rights variable as proposed by (Fariss 2014; Schnakenberg and Fariss 2014). Subsequently, we expand the data source by six more years and introduce a variable capturing dissent activity additionally to the domestic conflict variable. De Soysa and co-authors suggest pooled ordinary least squares (OLS) regression with Newey-West (1987) standard errors to control for serial correlation in the disturbances and heteroscedasticity (De Soysa, Jackson, and Ormhaug 2010; Newey and West 1987). This way they do not consider unobserved heterogeneity. We propose to include country fixed effects to the model to deal with unobserved heterogeneity (Schaffer 2015; Baum et al. 2007). We also argue that repression is more appropriately explained by a dynamic and linear model. Thus we move to a lagged dependent variable model with country fixed effects (Beck and Katz 2011).

### 3.1 *Dependent variable: respect for physical integrity rights*

Bearing in mind that the notion of human rights is a much broader concept, we focus on respect for physical integrity rights as our dependent variable for reasons of data availability. This measure captures violations of physical integrity rights committed by state officials against the population. Our choice is in line with previous research on state repression (Rivera 2016; De Soysa, Jackson, and Ormhaug 2010; Blanton 1999). Physical integrity rights consist of an array of rights such as freedom from political and unlawful imprisonment, freedom from torture as well as freedom from cruel and inhumane treatment. Reported violations in terms of extrajudicial killings and forced disappearance are also included in this variable.

In the replication model, we use the (Cingranelli and Richards 1999) measure of physical integrity rights protection. In our robustness analysis, we rely on updated and more reliable physical integrity rights protection data which is provided by (Fariss 2015). Using a dynamic ordinal item response theory model Fariss obtains a latent physical integrity rights variable (see (Fariss 2014; Schnakenberg and Fariss 2014) for a detailed description of the model and estimation approach). This continuous variable is preferable over other commonly used physical integrity rights data sets such as Political Terror Scale index or Cingranelli and Richard's Human Right Dataset as Fariss' variable incorporates a more stringent way of reporting and accounting for physical integrity rights violations over time (Fariss 2014). Hence, our estimates are more reliable and unlikely to be distorted by systematic changes in the way information about human rights abuses is processed and interpreted. In our sample, we normalize physical integrity rights for reasons of inter-country comparability and interpretation to range between 0 and 100. A value of 100 indicates no violations of physical integrity rights and value of 0 expresses no respect for physical integrity rights respectively. Descriptive statistics are provided in table 1 in the Appendix.

### 3.2 *Independent variables*

Our independent variable is retrieved from the Norwegian Initiative on Small Arms Transfers (NISAT) project which is provided by the Peace Research Institute Oslo (Marsh 2014). This database compiles data from different sources such as the UN Comtrade database and the UNROCA database, both relying on self-reporting of nation states. It reports the import value (in US\$ 1,000) for a variety of SALW. We take the logarithm of SALW imports per capita for our variable.

In line with previous literature, we control for the following variables which are argued to affect respect for physical integrity rights. Except for the variable ‘dissent’, all variables are also included by De Soysa, Jackson and Ormhaug. Table 2 in the Appendix provides an overview of how definitions and sources of the variables used in the replication analysis differ from De Soysa et al. 2010.

For one, we include population size (in logs). Larger populations are considered to increase pressure on governments by putting more stress on available resources of a country and increase scarcity (Carey 2010; Poe and Tate 1994). Data are drawn from the World Population Prospects (United Nations, Department of Economic and Social Affairs, and Population Division 2015). Previous research has repeatedly highlighted that being a democracy is positively related to respect for physical integrity rights since the political opportunity for rights violations is often constrained (Mesquita et al. 2005). In contrast to De Soysa, Jackson and Ormhaug, who include a dummy constructed from the Polity IV dataset, we use the binary variable provided by (Cheibub, Gandhi, and Vreeland 2010), later extended by (Bormann and Golder 2013), which takes the value of 0 for autocracies and 1 for democracies. Given that external conflict increases the likelihood of violations of physical integrity rights we consider a binary variable capturing whether interstate conflict occurs (e.g., (Poe and Tate 1994). Data for this variable is available from the

(Uppsala Conflict Data Program 2015). Similarly, a government is more likely to resort to rights violations if it faces domestic threats that challenge the political status quo. De Soysa and co-authors argue that the civil war variable captures dissent and they are confident to capture domestic conflicts, which drive repression. We argue that even lower level dissent already provokes repressive behaviour and therefore include a variable counting the number of the following dissent activities: anti-government demonstrations, strikes, and riots. The Cross-National Time-Series Archive by (Banks and Wilson 2013) provides such data on domestic dissent. Also, since economic development has been found to be inversely related to violations of physical integrity rights, we proxy a country's economic development using the logarithm of GDP per capita available from the World Development Indicators (World Bank 2014). In order to proxy a country's own production capabilities and control for the fact that producers of weapons may not require to import as many weapons as non-producers, the log of SALW exports per capita is included to the model. We follow literature in this aspect, due to a lack of comprehensive data on arms production capabilities (De Soysa, Jackson, and Ormhaug 2010). As Additional controls the share of Muslim population, the number of military personnel and whether the importer is exporting oil are included (De Soysa, Jackson, and Ormhaug 2010). In order to check whether the SALW imports rather capture overall militarization and not a SALW specific effect De Soysa and co-authors include overall arms imports over GDP. In contrast to this approach, we propose to use a variable accounting for conventional weapons imports only and include the log of the SIPRI TIV imports. On the one hand, the TIV measure is a constructed estimate of the value of the weapon and takes trend indicator units. Therefore, it should not be related to GDP. On the other hand, we are able to distinguish the effect of SALWS from the effect of conventional weapons by doing so. Summary statistics of the variables used in the analysis are provided in table 1.

Finally, it has been suggested that a country's respect for physical integrity rights in period  $t-1$  is likely to play a role for current respect for rights (Davenport 2007a). Thus, we suggest including a lagged dependent variable in our analysis as an alternative way to deal with autocorrelation.

## 5. Model estimation

First, we replicate the De Soysa, Jackson and Ormhaug estimation strategy by using ordinary least squares (OLS) regression with Newey-West standard errors in order to address autocorrelation and heteroscedasticity. More specifically, the baseline model is:

$$Repression_{i,t} = \rho SALW_{i,t} + \omega X_{i,t} + \delta_t + \mu_{i,t}, \quad (1)$$

where  $Repression_{i,t}$  presents respect for physical integrity rights of country  $i$  in period  $t$ .  $SALW_{i,t}$  denotes our main independent variable, i.e. imports of small arms and light weapons (SALWs). The term  $X_{i,t}$  includes the above described control variables, i.e. the logarithm of population size, dummy variables for democracy and interstate conflict, the number of dissent events, and the logarithm of per capita GDP. The baseline specification also controls for time fixed effects  $\delta_t$ . Subsequently, we introduce country fixed effects  $\gamma_i$  to the model.

$$Repression_{i,t} = \rho SALW_{i,t} + \omega X_{i,t} + \gamma_i + \delta_t + \mu_{i,t}, \quad (2)$$

In the literature, the inclusion of a lagged dependent variable is a second, more prominent approach to tackle the issue of autocorrelation. This choice is also favoured by (Beck and Katz 2011). De Soysa et al. decided against a lagged dependent variable approach, due to their rather small  $T=13$ . As we have a larger  $T$  we are confident using this approach. It is supported by the panel data structure of our data sample and in line with previous research on the determinants of state repression and arms imports (e.g.,

(Blanton 1999; Poe and Tate 1994). Our final model specification can be formulated as follows:

$$Repression_{i,t} = \alpha Repression_{i,t-1} + \rho SALW_{i,t} + \omega X_{i,t} + \gamma_i + \delta_t + \mu_{i,t} \quad (3)$$

Including fixed effects together with a lagged dependent variable can lead to biased estimates when the observed period of time  $t$  is small, also known as Nickell bias (Nickell 1981). Classical approaches to deal with this bias include the Arellano-Bond (Arellano and Bond 1991) difference GMM estimator (Roodman 2006). We show results with cluster-robust standard errors. Whether  $T=19$  can be considered as a sufficiently short time period for feasible difference GMM is debatable. As robustness check we present regression results for OLS fixed effects regression.

## 6. Empirical findings

In table 3, we report the estimates of the effect of the import of SALW on respect for physical integrity rights. Column 1 in table 3 reports the results for the replication of De Soysa, Jackson and Ormhaug. Column 2 displays the results when only the physical integrity rights variable is changed to the Fariss (2014) latent variable. Column 3 shows the results using our updated and extended dataset.

Across all three specifications, higher levels of arms imports per capita are associated with a decrease in respect for physical integrity rights. Based on these findings, all three models provide empirical support for the first part of the hypothesis that an increase in arms imports is associated with lower respect for physical integrity rights and confirms the findings of De Soysa and co-authors. When adding a standard deviation to the mean of SALW imports, the baseline prediction of the physical integrity rights variable changes from 47.52 to 45.31. This corresponds to a change of 0.5%, which is slightly higher than the effect De Soysa, Jackson and Ormhaug find. Similar to De

Soysa and co-authors, we find that the impact of the other variables in the model on repression is larger than the impact of SALW imports on repression.

Our control variables perform as expected. Dissent and civil war are statistically significant and associated with an increase in physical integrity rights violations. Being a democracy has a positive effect on physical integrity rights. Higher income levels lead to an increase in respect for physical integrity rights. The negative effect of population on physical integrity rights is also in line with theoretical expectations that larger population size exerts more pressure on governments. The more time passes after a civil war, the higher respect for physical integrity rights.

In the estimations presented in table 4 additional controls are included to the baseline specification following De Soysa, Jackson and Ormhaug: The share of Muslim population, the number of military personnel, whether the importer is exporting oil and conventional weapons imports. We find that respect for physical integrity rights is lower in oil exporting countries as well as in countries which employ a larger share of military personnel. Overall arms imports had no significant effect on physical integrity rights in the De Soysa and co-authors model. We also find no significant effect of conventional weapons imports on physical integrity rights, which indicates that the effect runs from SALW imports to physical integrity rights.

We find a positive effect of the interaction between regime type and SALW imports on respect for physical integrity rights. For interpretation of the interaction effect of regime type and arms imports on physical integrity rights, we provide conditional effects plots of SALW imports on repression by regime type (figure 1). As we are interested in contrasting De Soysa, Jackson and Ormhaug's findings with those obtained from most recent and updated data, we focus our interpretation of the results in the following by contrasting results of column 1 and 3. The figure shows the same



relationship holds in both model specifications: an increase of SALW imports is associated with a decrease in respect for physical integrity rights in autocracies. In democracies, however, an increase in arms imports only marginally positively affects respect for physical integrity rights. Concerning the interpretation of the strength of coefficients, we find that an increase in SALW imports only has a small effect on repression. We find an effect of roughly 7% when we add a standard deviation to the mean of SALW imports, which is only slightly more than De Soysa and co-authors find. These findings thus provide empirical support for the hypothesis that an increase in arms imports leads to a decrease in respect for physical integrity rights in autocracies, but not in democracies.

As explained above, we address the issue of unobserved heterogeneity, which has not been dealt with by De Soysa, Jackson and Ormhaug, by including country fixed effects to the model. Table 5 in the appendix shows the results. Figure 2 depicts the conditional effect of arms imports on respect for physical integrity rights by regime type. While the effect of democracies and autocracies was diverging in the previous estimations of the specification of De Soysa and co-authors (model 1), it now shows a negative effect on respect for physical integrity rights also in democracies, when unobserved heterogeneity is controlled for. This is an additional indicator that the omission of fixed effects is problematic. In our extended model specification (model 2) we are able to replicate the diverging effects of SALW imports on repression in democracies and autocracies.

The second important change in estimation approach we suggest is to include a lagged dependent variable to account for serial autocorrelation. Literature suggests that repression is well explained by a linear dynamic model. However, as we already mentioned combining a lagged dependent variable model with fixed effects potentially leads to Nickels bias. Especially datasets with large N and small T are prone to this bias. The time frame of our dataset ( $T=19$ ) is close to the often mentioned cutting line of  $T \geq 20$ ,

where OLS fixed effects may not be severely biased anymore. In the following we estimated the model with OLS fixed effects regression with Driscoll-Kraay standard errors to control for cross-sectional dependence, as well as using the Arellano/Bond GMM estimator. In order to avoid having too many instruments and thus overfitting the endogenous variables, we collapsed the matrix of instruments and specified time lags from which instruments are selected (Roodman 2009; Roodman 2006) as instrument “count is ordinarily quadratic in T” (Roodman 2009). The results can be found in table 6. We find that the estimate of our main variable of interest, SALW imports, is significant and has the expected previously confirmed sign.

We observe the estimate of the lagged dependent variable (LDV) with some concern. Critics of the LDV approach argue that including lagged dependent variables can lead to misleading inferences (Keele and Kelly 2006; Achen 2000). Estimates of included control variables may turn insignificant or even reverse signs in the presence of serial correlation or non-stationarity (Achen 2000). Keele and Kelly show that OLS estimation with LDV is robust to modest violations of the i.i.d. assumption of the error term. However, estimates are severely biased when the error term is highly autoregressive (Keele and Kelly 2006). Others criticise the inclusion of fixed effects and lagged dependent variables is not driven by theory and suggest controlling for serial correlation with the Prais-Winstone technique (Plümper, Tröger, and Manow 2005). We also run regressions of our model with a Prais-Winstone transformation. Results are almost identical to the Newey-West procedure and therefore not included in the paper.

An alternative to the lagged dependent variable approach to take the dynamics of repression into account is to include a decay function (Carey 2010). The idea is that the dynamic influence of previous repression is non-linear. It exerts strong influence in the first years, but then vanishes. We implement the strategy of Carey (2010). The results

are shown in table 7. The estimate of the decay function is strongly negative and significant. That indicates that recent repression has a strong influence on current repression levels. The other estimates have expected signs. However, not all estimates show the expected and previously found levels of significance. This finding cannot be attributed to the inclusion of fixed effects as their inclusion does not change the estimates as significantly as accounting for dynamics. Thus, it is a direct effect of the inclusion of previous repressive behaviour and shows that accounting for dynamics is important. In addition measures of model fit improved in the dynamic specification as compared to those without controlling for the dynamics of repression. They do not show the probably exaggerated values of the model where the lagged dependent variable has been included. Figure 3 finally shows again the conditional effect of SALW imports on physical integrity rights we obtained from the estimation of the model with the decay function. It shows that the picture has not changed in general.

Summing up, we find that controlling for unobserved heterogeneity, as well as for previous repressive behaviour improve the results obtained. In addition, we show that the results of De Soysa, Jackson and Ormhaug (2010) are robust to different model specifications and observation period chosen. Thus there is a strong and robust confirmation of the theory of the differential effect of SALW imports in democracies and autocracies exists.

## **7. Conclusion**

This paper has re-assessed whether arms imports are linked to a worsening of human rights conditions. We find that the level of SALW imports per capita is associated with higher levels of repression. When disaggregating the effect of arms imports by regime type, results suggest that an increase of SALW imports is associated with a decrease in respect for physical integrity rights in autocracies but not in democracies. This indicates

that results of De Soysa, Jackson, and Ormhaug (2010) are robust to the use of more reliable data, increased coverage, thorough robustness checks and sophisticated estimation strategies.

While our argument and findings provide empirical evidence for a robust relationship between small arms imports and repression, transmission channels are yet unclear for two reasons. First, it has to be kept in mind that the existence and import of arms may not be the reason for repression *per se*. Although we find a link, we also show that SALW imports are not always decreasing respect for physical integrity rights. It is likely that domestic conflicts and the way how different regimes deal with such conflicts are causal to repression. The militarization of security forces, for instance, only follows the decision to repress dissent. Second, our analysis may be prone to endogeneity. For multiple reasons, the transmission channel may actually be reverse, i.e. higher repression may lead to an increase in SALW imports. Due to a lack of strong appropriate instruments the problem of endogeneity could not be addressed sufficiently so far, for example with an instrumental variables approach.

Our findings bring up interesting follow-up questions. In particular, it should be further investigated to what extent human rights standards in importing countries affect the trade decision of exporters. While it has long been argued and shown by research that arms imports are associated with lower levels of protection of physical integrity rights, our findings suggest that rights standards do not seem to play a decisive role for the exporters. In this context, it would be especially interesting to investigate the role of the Arms Trade Treaty, which came into force 2014 and is the first international agreement requiring exporting states make an assessment of likely human rights consequences of an arms transfer before exporting. This is linked to the discussion of

whether states violate arms embargoes for political or more for economic interests (see Moore 2010).

In addition, a closer look at the effect of SALW imports in democracies presents a fruitful avenue for future research. While we clearly find that democracies are unlikely to increase repression when increasing SALW imports, we wonder whether this is because democracies are more likely to resort to other coercive measures which are not captured by our dependent variable.

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## 9. APPENDIX

Table 1 Descriptive statistics

Variables	N	Mean	Std. Dev.	Min	Max
Physical integrity Rights CIRI°	2110	5.001	2.216	0	8
Share of Muslim population°	1847	27.202	37.259	0	100
Oil revenues°	1686	0.153	0.360	0	1
Military personnel WDI°	1572	1.726	1.844	0.071	14.446
Arms imports/GDP °	1948	0.099	0.313	0	6.358
SALW imports/pc log°	1953	-1.819	2.010	-5.422	2.607
SALW export/pc log°	1889	-7.489	6.311	-15.527	2.576
GDP per capita log°	2028	8.470	1.136	6.137	10.889
Democracy °	1701	0.471	0.499	0	1
Population log°	2128	15.792	1.870	11.191	20.989
Civil War°	2184	0.151	0.358	0	1
Time since the last civil war between 1945 & 2004°	2184	22.501	19.936	0	60
Repression	2985	47.521	16.857	5.230	99.922
Share of Muslim population in 1980	2985	23.008	35.249	0	99.900
Oil exports	2787	0.155	0.362	0	1
Military personnel WDI	2720	1.649	1.836	0	16.230
SIPRI TIV imports	1728	17.837	1.955	13.816	21.992
SALW imports/pc log	2985	-1.639	2.467	-11.291	3.936
SALW export/pc log	2985	-7.415	6.393	-18.885	3.478
GDP per capita log	2985	8.013	1.606	4.735	11.364
Democracy	2985	0.586	0.493	0	1
Population log	2985	15.759	1.898	11.168	21.003
Dissent	2985	0.763	1.957	0	37
Civil War	2985	0.145	0.352	0	1
Time since the last civil war between 1945 & 2010	2985	32.206	24.641	0	65
Years	2985	2001.342	5.406	1992	2010

Note: ° indicates replication data which has been provided by De Soysa et al. (2010).

Table 2 Variable sources and differences between models

<b>Variable</b>	<b>De Soysa et al. (2010)*</b>	<b>Our variable</b>
Physical integrity Rights	Cingranelli and Richards (CIRI)	Fariss (2014)
Share of Muslim population	CIA Factbook following (Mehlkop and Graeff 2003)	(La Porta et al. 1999): Share of Muslim population of total population in 1980
Oil exporter	(Fearon and Laitin 2003): Oil exporter if oil revenues exceed 1/3 of total revenues	(Ross 2013): Oil exporter if net exports/GDP exceeds the value 0.05
Military personnel	(World Bank 2007)	(World Bank 2014)
Total arms imports	Arms Imports / GDP following Blanton (1999)	(SIPRI, n.d.): TIV for conventional weapons imports in log
SALW imports	Norwegian Initiative on Small Arms Transfers (NISAT)	Norwegian Initiative on Small Arms Transfers (NISAT)(Marsh 2014)
SALW export	Norwegian Initiative on Small Arms Transfers (NISAT)	Norwegian Initiative on Small Arms Transfers (NISAT)(Marsh 2014)
GDP per capita log	(World Bank 2007): GDP per capita, PPP adjusted	(World Bank 2014) GDP per capita, constant USD
Democracy	Polity IV (Marshall and Jaggers 2011): Democracy if Polity2 score > 6	(Bormann and Golder 2013)
Population	World Bank (2007)	(United Nations, Department of Economic and Social Affairs, and Population Division 2015)
Civil War	UCDP/PRIO Armed Conflict Dataset	(Uppsala Conflict Data Program 2015); (Gleditsch et al. 2002)
Time since the last civil war between 1945 & 2004	Calculations based on civil war data	Calculations based on civil war data
Dissent	-	(Banks and Wilson 2013)

Note: De Soysa et al. (2010) replication data for download available at <http://www.svt.ntnu.no/iss/Indra.de.Soyasa/default.htm>

Table 3 OLS regression of the effect of SALW imports on respect for physical integrity rights, baseline model specification

Variables	[1]	[2]	[3]
Democracy x SALW imports per capita (log)	0.149*** (0.045)	1.887*** (0.346)	1.339*** (0.251)
SALW imports per capita (log)	-0.119*** (0.036)	-1.175*** (0.210)	-1.072*** (0.201)
SALW exports per capita (log)	0.026** (0.009)	0.185** (0.058)	0.062 (0.105)
Democracy	0.438*** (0.066)	4.323*** (0.412)	4.666*** (0.324)
GDP per capita (log)	1.060*** (0.129)	8.897*** (0.877)	8.406*** (0.615)
Population (log)	-0.527*** (0.033)	-3.507*** (0.203)	-2.898*** (0.196)
Civil war	-2.240*** (0.133)	-11.663*** (0.827)	-10.150*** (0.958)
Subsequent peace years	0.016*** (0.003)	0.174*** (0.019)	0.132*** (0.013)
Dissent (sum)			-0.656*** (0.162)
Constant	9.053*** (0.824)	59.055*** (5.104)	48.927*** (4.118)
Observations	1,698	1,727	1,944
Year FE	Yes	Yes	Yes
Years	1992-2004	1992-2004	1991-2010
Countries	136	136	176

Note: Newey-West standard errors in parentheses. Model 1 estimates the baseline model by De Soysa et al. (2010). Model 2 estimates the baseline model with Fariss' (2014) respect for physical integrity rights variable. Model 3 estimates and extends Model 2. \*\*\* p<0.001, \*\* p<0.01, \* p<0.5.

Table 4 OLS regression of the effect of SALW imports on respect for physical integrity rights, inclusion of control variables

Variables	[1]	[2]	[3]
Democracy x SALW imports per capita (log)	0.111* (0.045)	1.710*** (0.364)	1.140*** (0.322)
SALW imports per capita (log)	-0.107** (0.037)	-1.165*** (0.219)	-0.994*** (0.239)
SALW exports per capita (log)	0.021* (0.010)	0.171** (0.058)	-0.033 (0.144)
Democracy	0.519*** (0.070)	5.174*** (0.442)	5.769*** (0.429)
GDP per capita (log)	0.854*** (0.150)	7.892*** (1.029)	5.793*** (0.950)
Population (log)	-0.564*** (0.035)	-3.858*** (0.209)	-3.508*** (0.315)
Civil war	-2.175*** (0.138)	-10.440*** (0.799)	-8.190*** (0.960)
Subsequent peace years	0.016*** (0.003)	0.191*** (0.019)	0.137*** (0.016)
Dissent (sum)			-0.569*** (0.143)
Share of Muslims	0.003* (0.002)	0.041*** (0.009)	0.032** (0.012)
Oil exporter	-0.462*** (0.138)	-2.496** (0.870)	-3.250** (1.190)
Share of military personnel	-0.106*** (0.029)	-1.305*** (0.230)	-2.009*** (0.228)
Total arms imports/ GDP	-0.083 (0.181)		
SIPRI TIV (log)		-0.218 (0.829)	0.027 (0.190)
Constant	9.221*** (0.832)	58.309*** (5.048)	52.093*** (5.060)
Observations	1,493	1,521	1,338
Year FE	Yes	Yes	Yes
Years	1992-2004	1992-2004	1992-2010
Countries	130	130	152

Notes: Newey-West standard errors in parentheses. Model 1 estimates the baseline model by De Soysa et al. (2010). Model 2 estimates the baseline model with Fariss' (2014) respect for physical integrity rights variable. Model 3 estimates the extended model. \*\*\* p<0.001, \*\* p<0.01, \* p<0.5.

Table 5 OLS fixed effects regression of SALW imports on physical integrity rights

Variables	[1]	[2]
Democracy x SALW imports per capita (log)	0.023 (0.063)	0.278* (0.266)
SALW imports per capita (log)	-0.071* (0.044)	-0.199* (0.196)
SALW exports per capita (log)	0.014* (0.009)	0.348*** (0.099)
GDP per capita (log)	0.754* (0.405)	3.144* (1.568)
Democracy	0.418* (0.220)	5.409*** (1.252)
Population (log)	1.917* (0.773)	0.533 (2.251)
Civil war	-1.395*** (0.157)	-6.598*** (0.795)
Subsequent peace years	0.006* (0.007)	0.134*** (0.018)
Oil exporter	0.015 (0.408)	-1.177* (1.425)
Share of military personnel	-0.048* (0.041)	-0.162 (0.311)
Total arms imports/ GDP	-0.130* (0.134)	
SIPRI TIV (log)		0.059 (0.109)
Dissent (sum)		-0.121* (0.057)
Observations	1,493	1,320
R <sup>2</sup>	0.114	0.336
Countries	130	115
Country FE	Yes	Yes
Year FE	Yes	Yes
Years	1992-2004	1992-2010

Note: Newey-West standard errors in parenthesis. \*\*\* p<0.001, \*\* p<0.01, \* p<0.5. Model 1 estimates the baseline model of De Soysa et al. (2010) using fixed effects. Model 2 relies on Fariss' (2014) physical integrity rights measure and includes fixed effects.

Table 6 Fixed effects regression of the effect of SALW imports on respect for physical integrity rights with a lagged dependent variable (OLS/GMM)

Variables	[1]	[2]
Repression, lag (1)	0.911*** (0.009)	0.786*** (0.105)
Democracy x SALW imports per capita (log)	-0.000 (0.085)	0.587* (0.585)
SALW imports per capita (log)	-0.019 (0.061)	-0.420* (0.410)
SALW exports per capita (log)	-0.045* (0.027)	-0.055 (0.156)
GDP per capita (log)	-1.217* (0.433)	0.954 (2.199)
Democracy	0.097 (0.377)	0.507 (2.032)
Population (log)	-1.336* (0.751)	-0.310 (2.929)
Civil war	-1.766*** (0.187)	0.156 (1.257)
Subsequent peace years	-0.007* (0.009)	0.067* (0.092)
Oil exporter	0.065 (0.277)	-0.422 (4.145)
Share of military personnel	0.293* (0.118)	0.861* (0.611)
SIPRI TIV (log)	-0.032* (0.026)	0.026 (0.185)
Dissent (sum)	-0.073** (0.021)	-0.046 (0.112)
Share of Muslims	1.790* (0.749)	0.000 (0.000)
Observations	1,338	1,039
R <sup>2</sup> (within)	0.895	
Number of importerid	133	96
Country FE	Yes	Yes
Year FE	Yes	Yes
Years	1992-2010	1923-2010
Number of instruments		57
$\chi^2$		163.1
$\chi^2$ p- value		(0.000)
Hansen df		43
Hansen p-value		0.459
Sargan df		43
Sargan p-value		0.000697
AR (1)		-2.099
AR p-value		0.0358
AR (2)		-1.625
AR p-value		0.104
AR (3)		-0.921
AR p-value		0.357

Note: Model 1 estimated with OLS fixed effects, Driscoll-Kraay standard errors in parenthesis. Model 2 uses Arellano/Bond difference GMM estimator, clustered standard errors in parentheses. \*\*\* p<0.001, \*\* p<0.01, \* p<0.05.

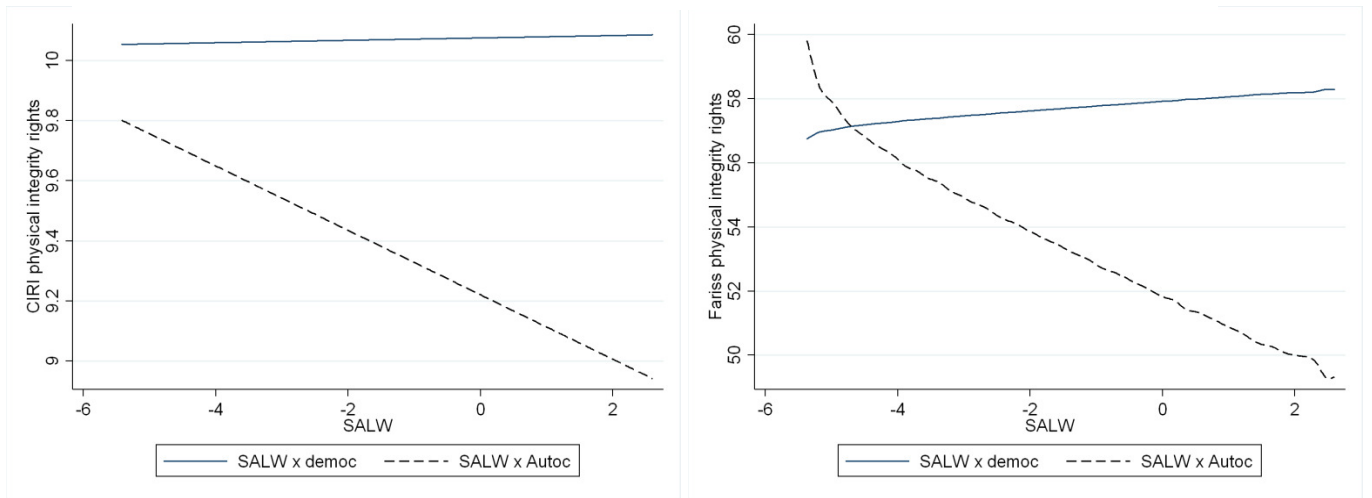
Table 7 OLS fixed effects regression of the effect of SALW imports on respect for physical integrity rights with a decay function

Variables	
Decay function	-9.012*** (0.940)
Democracy x SALW imports per capita (log)	0.210* (0.255)
SALW imports per capita (log)	-0.153* (0.132)
SALW exports per capita (log)	0.213* (0.089)
GDP per capita (log)	0.991* (0.936)
Democracy	5.145*** (0.888)
Population (log)	0.220 (1.122)
Civil war	-6.333*** (0.534)
Subsequent peace years	0.061*** (0.010)
Oil exporter	-0.364 (1.095)
Share of military personnel	-0.008 (0.387)
SIPRI TIV (log)	0.038 (0.129)
Dissent (sum)	-0.100* (0.042)
Share of Muslims	1.631* (1.081)
Observations	1,338
R <sup>2</sup>	0.398
Countries	133
Country FE	Yes
Year FE	Yes
Years	1991-2010

Note: Driscoll-Kraay standard errors in parenthesis \*\*\* p<0.001, \*\* p<0.01, \* p<0.5

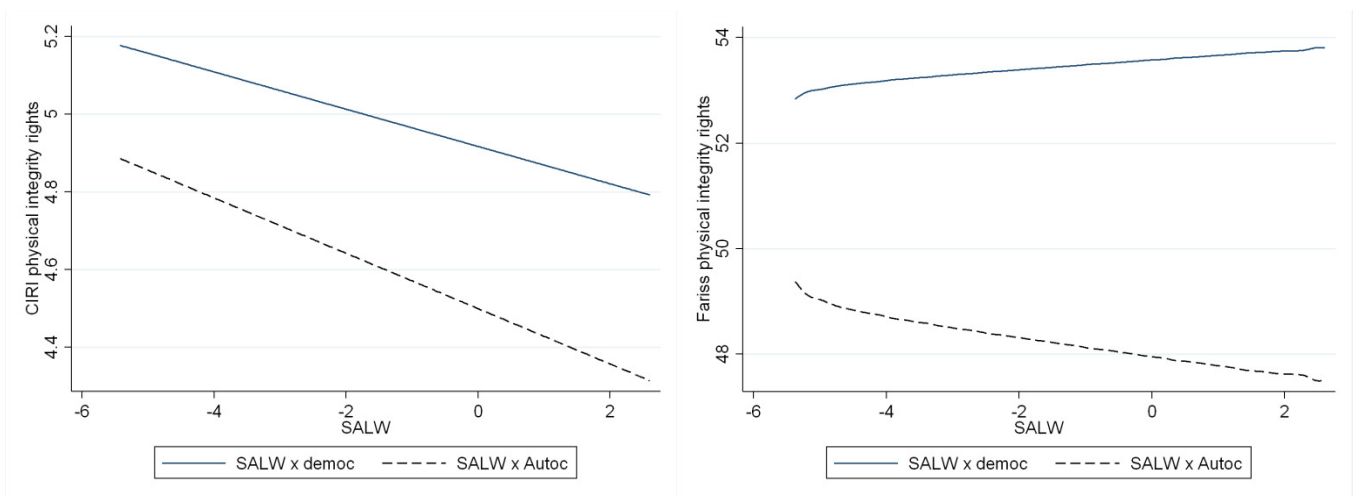


**Figure 1 Conditional effects of SALW imports on physical integrity rights by regime type**



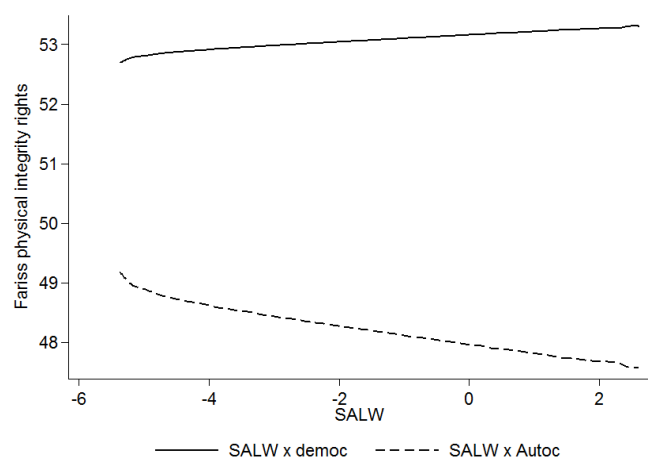
Note: Left panel calculated from model 1, Table 4. Right panel calculated from model 3, Table 4.

**Figure 2 Conditional effects of SALW imports on physical integrity rights, FE regression**



Note: Left panel corresponds to model 1, Table 5, right panel to model 2, Table 5.

**Figure 3 Conditional effect of SALW imports on physical integrity rights by regime type, decay function included**



Note: Corresponds to table 7.