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FULL ARTICLE

Regional diffusion of military regimes in sub-Saharan Africa

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Abstract

Military dictatorships have been decreasing in number and concentrating in Africa. This paper analyses their spatial diffusion in sub-Saharan Africa between 1978 and 2014 applying a Bayesian SAR Probit regression. We find a significant and positive spatial coefficient only in the aftermath of the Cold War. This result suggests that once the global order of the Cold War vanished, geography took back its role and regional factors became crucial in shaping the institutional landscape. The evidence is interpreted in light of the patron-client approach. Among covariates, a larger manufacturing sector is associated with a smaller probability of a military regime.

KEYWORDS

Military regimes, Cold War, Sub-Saharan Africa, Bayesian SAR probit model, spatial autocorrelation

JEL CLASSIFICATION

D74; P48; Q34

1 | INTRODUCTION

In 1972 military autocracies accounted for 24.6% of the world countries, almost half of them (45.7%) were located in Africa. Military regimes in 2014 ruled 7% of the world countries only, with a concentration of almost 50% of them in Africa (Wahman, Teorell, & Hadenius, 2013). This paper tests whether the probability that a country in Sub-Saharan Africa is a military regime increase as the share of neighbors governed by a military rule gets larger. In other words, this paper tests whether there is a spatial correlation between military regimes in Sub-Saharan Africa for the period 1978-2014. Following Strang (1991: 325), we interpret the institutional diffusion as the process by which the

"*prior adoption of a trait or practice in a population alters the probability of adoption for remaining non-adopters*". As noted above, the number of military autocracies has been declining over time, therefore, the departure point of our analysis is that we investigate characteristic features of a regime that has been concentrating over time, just the opposite of the typical studies addressing diffusion processes. Our period under investigation covers also a sub-period of the Cold War. Then we are able to claim that such backward diffusion is to be explained in the light of the collapse of the Cold War global order. In fact, we found that the spatial correlation between military regimes is positive and significant only after 1989. Put differently, we empirically show that Cold War order had thwarted (or partly neutralized) regional forces of institutional diffusion.

A plausible interpretation of our results provides a novel, indirect but strong, empirical evidence for a patron-client relationship between major powers and African countries in line with the approach envisioned in Carney (1989). A patron-client relationship is a dyadic interdependence between two actors. In economic terms, the client is dependent on the patron. In fact, the client gains some economic support from the patron that in return is granted with full political support. In our context, the existence of such patron-client relationships between major powers and African countries could explain why local spatial dependence could have been less relevant during the Cold War. In other words, the economic dependence of African countries on either USA or USSR support have significantly set aside regional dynamics because each government would have rationally followed directions of its patron not only in foreign policy but also when shaping domestic political regime. Due to the demise of the global order of the Cold War, patron-client relationships lost relevance and regional factors and linkages became crucial to shape the institutional landscape. In other words, geography took its role in shaping polities and so spatial dependence have become more relevant. As Kaufman (1974) pointed out, the patron-client relationship exhibits some common characteristics with dependence approach of the world-system theories. In fact, in both cases, the relationship is between actors of unequal power and capabilities. Within the world-systems framework, the present research has some linkages with 'the politics of failure' approach as envisioned in Osei-Kwame and Taylor (1984). The latter is based upon the idea that in weak states resources are allocated to 'stability and order'. In our perspective this would support the creation and survival of a military rule. In the same vein, this is also explained in Wendt and Barnett (1993) that discuss state formation and militarization in the 'Third world'.

Besides evidence on spatial patterns, therefore, we also corroborate our results by employing some control variables. Some economic covariates are in line with the established results in the literature so indirectly confirming the robustness of our results. We maintain that: (i) a larger manufacturing sector is associated with a smaller probability of a military rule; (ii) there is a positive association between foreign aid and the military government only during the Cold War.

In performing our analysis, we espouse a definition of military regime that takes into account the '*de facto*' power of armed forces even if the leaders are civilian. Such definition is drawn from the Authoritarian Regimes Dataset edited by Hadenius and Teorell (2007). In addition, we exploit recent developments in spatial econometrics, by applying a Bayesian SAR Probit regression.

Needless to say, this work has some limitations. First, the evidence we may claim is for sub-Saharan African countries only. We have chosen to focus on a large region, instead of looking for global evidence and this decision is based on previous literature. In fact, Starr (1991) claimed the necessity of 'domain specific' analysis when studying processes of diffusion and transmission of regimes. O'Loughlin et al. (1998: 568) also strongly maintain the opportunity of carrying on studies on regional contexts rather than global, because "*the trends since 1945 are not uniformly towards democracy (…) there may not be a single conduit through which democracy diffuses*." In brief, those studies have highlighted that there must be caution while searching for universal laws of transmission of regimes and therefore that regional contexts would be more useful. In addition, we have to highlight one more time that our analysis is focused on military regimes only. This implies that these results do not necessarily apply to other forms of autocracy and authoritarianism. Third, lack of data prevented us to deepen the analysis considering other intervening factors and variables (military spending and trade linkages among others). In fact, we have chosen to focus on the longest time-span possible in order to get reliable results of our main factor of interest, namely the spatial dependence. The trade-off was between a long time span and a larger set of variables. We have chosen the first.

The paper is structured as follows: Section 2 reviews some related literature, whereas Section 3 presents the framing of our working hypotheses. In Section 4 the data and the econometric methodology are described, and Section 5 reports the results of the analysis. Section 6 summarizes and concludes.

2 | BACKGROUND AND LITERATURE

This paper is related to different strands of literature, at the crossroads between economics and political science. First, this paper relates to a wide literature on spatial diffusion of institutional regimes. In recent years, diffusion models have been extensively studied to analyze the global widespread of democracy, economic liberalism and trade regionalism. Fragmentation of the Soviet Union and the eastern enlargement of the European Union favored a novel interest in diffusion processes. This literature has been mainly empirical, but a few theoretical models have been presented. Using an agent-based model, Cederman and Gleditsch (2004) claim that democracies surrounded by nondemocracies have a high likelihood of succumbing in subsequent wars, whereas democracies that are contingent to each other are likely to support each other militarily and help each other survive. In fact, clustered democracies do not fight each other, and share resources to defend against neighboring regimes.

Gleditsch and Ward (2006) think of diffusion in terms of how linkages to external actors and events influence the relative power and the choices of relevant groups in struggles over political institutions and outcomes. They range from imposition through intervention, coercion, and support. With respect to the latter, Schelling's "tipping model" (Schelling, 1971) suggests that small changes in external context may yield cascades that generate a clustering of transitions, with one transition increasing the likelihood of subsequent transition in contiguous states. In Elkink (2011) individuals differ in their attitude towards political regimes, and communication (possibly directed from the government or by neighboring governments) may change these attitudes. This communication takes place most intensively between citizens of the same country and to a lesser extent between randomly selected citizens of neighboring countries. Regimes can change, and such transitions can be the result of actions by the political elite or a public demonstration of a lack of support among the population.

Among empirical analyses, the seminal contribution is Starr (1991) that has verified a global movement towards democracy. The author presents an analysis of bordering governmental transition during the period 1977-1987, using variations in the Freedom House indices of political rights and civil liberties. He finds significant global and regional effects, but he warns that they are solely the trigger for a change, because the prerequisite is that the country is ready for innovation in terms of their internal setting. Starr and Lindborg (2003) enrich the foregoing work by analyzing the period 1974-1996 confirming that neighbor effects matter to explain institutional settings. Doorenspleet (2004) also finds a geographical pattern of the transition to democracy: countries surrounded by more neighbors that are democratic tended to improve their level of democratization, and vice versa.

Brinks and Coppedge (2006) move a step forward and provide an explanation of the diffusion mechanism, modeling a process of "neighbor emulation" where bordering countries tend to converge towards a shared level of democracy or non-democracy. The core assumption is that countries are rewarded when their regimes are similar to those of their neighbors, and the differential in the index of democracy between bordering countries generates pressure for a change. The authors challenge the idea that diffusion is an econometric illusion generated by global trends, a correlation among the disturbances or the regional clustering of domestic factors that is a severe issue, especially in cross-country datasets. The results of the empirical analysis confirm the presence of a pattern of diffusion of democratization across bordering states, the relevance of global trends and the stimulus represented by being in the US sphere of influence. Leeson and Dean (2009) also study whether the theory of democratic diffusion holds for a large panel of 180 countries in the period 1850-2000. Empirical findings show that some democratic contagion does exist, but it is less relevant than those predicted by the model. Gassebner, Lamla, and Vreeland (2013), in a gigantic study on determinants and survival of democracies for 165 countries in the period 1976-2002, find that if a country has democratic neighbors survival of democracy tends to be more likely.

Besides specific studies on democracy, more, in general, this paper also relates to works explaining the emergence of diverse institutional spillovers. With specific regard to African countries, De Groot (2011) focuses on the development of political freedoms and democracy. The author analyzes several path-dependent variables, such as the history of political freedom and the improvements emerged in neighboring countries finding that an improvement of political freedom is associated with an increase in the probability of improvement in neighboring countries.

This work also draws insights from the recent literature that analyses the relationship between economic factors, autocracies, and military governments. Classical references on the economics of autocracy are Tullock (1987), McGuire and Olson (1996) and Wintrobe (1998). Recent theoretical models describe an agency problem: within a polity, the elite imposes predatory policies that may generate pressures for civil war. The risk of social unrest increases as the income distribution becomes more uneven, a situation that is encouraged by weak state capacity, namely legal and fiscal capacity (Acemoglu, Ticchi, & Vindigni, 2010; Besley & Persson, 2008, 2009; Besley & Robinson, 2010). Caruso, Costa, and Ricciuti (2014) empirically supported the impact of economic variables and political factors on the probability of a military regime. In particular, it is shown that productive sectors as manufacturing are positively associated with the existence of a military rule even if a negative association does take shape with regard to per capita income.

3 | FRAMING THE HYPOTHESIS

In this section we propose some arguments which can be considered as pillars of a conceptual framework to understand why diffusion of military regimes can take shape. First, spatial diffusion of military regimes could depend upon preference of autocrats towards other autocracies in their regional neighborhood. The second argument interprets the possible spatial dependence of military regimes as a consequence of the spatial dependence of military coups. A third argument is related to the recurring characteristic feature of military regimes, namely a heavy reliance upon military spending. Finally, an additional hypothesis is expounded, namely the idea that the foregoing arguments could have been considered irrelevant and ineffective during the Cold War.

There is an established literature which highlights why democratic states prefer other democratic states as neighbors. A crucial aspect of such an idea is the production of transnational public goods. Since autocratic governments are committed to produce and redistribute private goods the question is whether such argument can hold similarly. Recently novel contributions in political science are seeking an answer to this question. In this vein, Bader, Gravingholt, and Kaestner (2010) argue that this is the case and therefore autocratic regimes can be expected to prefer autocratic regimes as neighbors. Kneuer and Demmelhuber (2016) study the 'authoritarian gravity centres' as engines of autocracy promotion. Vanderhill (2012) with regard to Eastern Europe presents three mechanisms that could partly explain regional diffusion of autocracies in particular when they are triggered by external actors: (i) an informal and indirect mechanism defined 'demonstration effect' which predicts that policy-makers do not implement policies which can generate negative consequences in neighbor states. Albeit informal, this mechanism contributes to explain why autocratic regimes may adopt similar policies; (ii) a direct and non-coercive mechanism of collaborative political strategies to secure the survival of autocracies; (iii) a direct external pressure on policy-makers to adopt specific policies and norms. External actors may want to favor the diffusion of autocracies also encouraging collaboration between illiberal regimes in the same region. The latter paper belongs to a growing set of studies that analyze the patterns of international cooperation between autocracies. Interestingly, Mattes and Rodriguez (2014) show that military regimes are more open than other autocracies to international cooperation. In sum, military regimes - as any other political regime – would prefer similar regimes as neighbors. This also would explain the spatial correlations of military regimes.

A second argument is related to the contagion of military coups. In fact, many military regimes originate from a military *coup d'état*. After 1989 the decline of military coups and the increase in the institutionalization of politics in Africa took place (Clark, 2007): three-quarters of African leaders who left power in the '60s and the '70s did so through a coup, against 50% in the '90s and 20% in 2000-2005. However, as pointed out in McGowan (2003) despite the democratization processes military coups (either failed or successful) have been pervasive in sub-Saharan Africa. Some

scholars have argued that there could be a contagion of coups in regional contexts. Huff and Lutz (1974) have studied the diffusion of coups in Africa. More recently Pérez-Linàn and Polga-Hecimovich (2017) have analyzed the patterns of regional diffusion of military coups in Latin America. Contrariwise, Miller, Joseph, and Ohl (2018) by means of an Extreme Bounds Analysis analysis that a spatial dependence of military coups cannot be envisioned. In brief, in the presence of a spatial correlation of military coups, the same pattern could be envisioned for military regimes.

Another channel that can be considered in our specific context is military spending. Autocracies exhibit higher military spending as a share of GDP than democracies (see the empirical evidence produced in Bove & Brauner, 2016). As it is widely known military spending – among other factors - depends upon neighbors' military spending. This is particularly true for less developed countries as expounded in Dunne and Perlo-Freeman (2010). Therefore, since it tends to cluster in space, the same tendency may hold for regimes which are enforced through high levels of military spending. This latter point reinforces the previous one. Unfortunately, because of lack of data in what follows we are not able to include this variable in our empirical analysis.

As mentioned above, the foregoing arguments may have been ineffective during the Cold War. Following Carney (1989) we can interpret as shaping principle of both domestic and foreign politics the patron-client relationship between major powers and African countries. A relationship patron-client relationship is a dyadic interdependence between two actors, namely two states. The client state gains some economic support from the patron, and in return is granted with a full and continuing political support. In our context, the existence of such patron-client relationships between major powers and African countries could explain why local spatial dependence could have been less relevant during the Cold War. In other words, the economic dependence of African countries on either USA or USSR has significantly set aside geography, namely regional and local forces because each government would have rationally followed directions of its patron not only in foreign policy but also when shaping domestic political regime. The opportunity cost of forsaking this relationship would have been extremely high for state-clients. Therefore, it is rational to expect that spatial dependence between military regimes would have not been in place. The patron-client relationship shares some characteristics with dependence approach of the world-system theories. In both, the relationship is between actors of unequal power and capabilities. Moreover, we find some analogies with the approach envisioned in Osei-Kwame and Taylor (1984): (i) the world-economy has and impact on local dynamics; (ii) the world economy determines the amount of resources available. This implies that "[…] *politics operates at all scales simultaneously* […]" (p. 587). In particular, in peripheral states, the weakness of the economy determines that state resources are allocated to maintain order and stability. In simpler words, the resources available through the world economy have an influence on the shape of the internal regime. In line with what expounded above, this must be particularly true in the Cold War period.

The previous lines of reasoning can be summarized in the following hypotheses:

> **Hypothesis 1.** *There is no spatial correlation between military governments in sub-Saharan Africa in the Cold War period.*
>
> **Hypothesis 2.** *Positive spatial correlation between military rules in sub-Saharan Africa exist for the post-Cold War period.*

4 | DATA AND METHODOLOGY

The focus variable of this study is the military character of the country's government as coded in the Authoritarian Regimes Dataset[1] (Hadenius & Teorell, 2007; Wahman, Teorell and Hadenius et al., 2013). The military regime[2] is

[1]The variable *regime1ny* is composed of the following categories: 1 Monarchy, 2 Military, 3 One party, 4 Multi-party, 9 No-party, 99 Other, 100 Democracy.

[2]In this respect please refer to the discussion proposed in Wahman et al. (2013) at pag. 25. There the authors explain the differences between the definition of military regime adopted and that proposed in Geddes, Wright, and Frantz (2012) and Cheibub, Gandhi, and Vreeland (2010). Other dataset that are not discussed in Wahman, Teorell and Hadenius et al. (2013) share similar problems. The Database of Political Institutions (Beck, Clarke, Groff, Keefer, & Walsh, 2001) defines a military regime when the chief executive has a military rank. Regan, Frank, and Clark (2009) consider a military regime as 'an executive [that] has the power to use military force abroad without legislative approval,' which appears to be too narrow for our purposes.

defined as '*the actual or threatened use of military force, referring to Military regimes, where the armed forces may exercise political power either directly or indirectly (i.e., by controlling civilian leaders behind the scenes). Regimes where persons of military background are chosen in open elections (which have not been controlled by the military) thus should not count as military*'. The military category also includes *rebel regimes*, i.e., cases where a rebel movement has taken over the power by the use of force, namely by military means, and the regime has not developed into another kind of regime. This category is particularly important in Africa, where rebel groups often seize power from existing regimes (Congo-Kinshasa from 1997 to 2003 is one example). In other datasets, such as Geddes et al. (2012) and Cheibub et al. (2010), which are explicitly discussed in Wahman et al. (2013), the military variable is coded as the chief executive currently being or having been a military officer in the past. Although this is a more transparent way of coding the variable, it includes former military officials that have been democratically elected and excludes civilian rules that are manoeuvred from the military.

Figure 1 plots military and civilian regimes in five selected years: 1975, 1985, 1995, 2005, 2010, and 2014.[3] Dark-shaded countries denote military regimes. In 1975 we observe the existence of military regimes in the central area of sub-Saharan Africa, nearby the Democratic Republic of Congo. This area shrinks over time, with minor differences from 1975 to 1985, but faster afterwards, as the smaller areas of civil governments tend to expand from the three original poles in which they were confined.

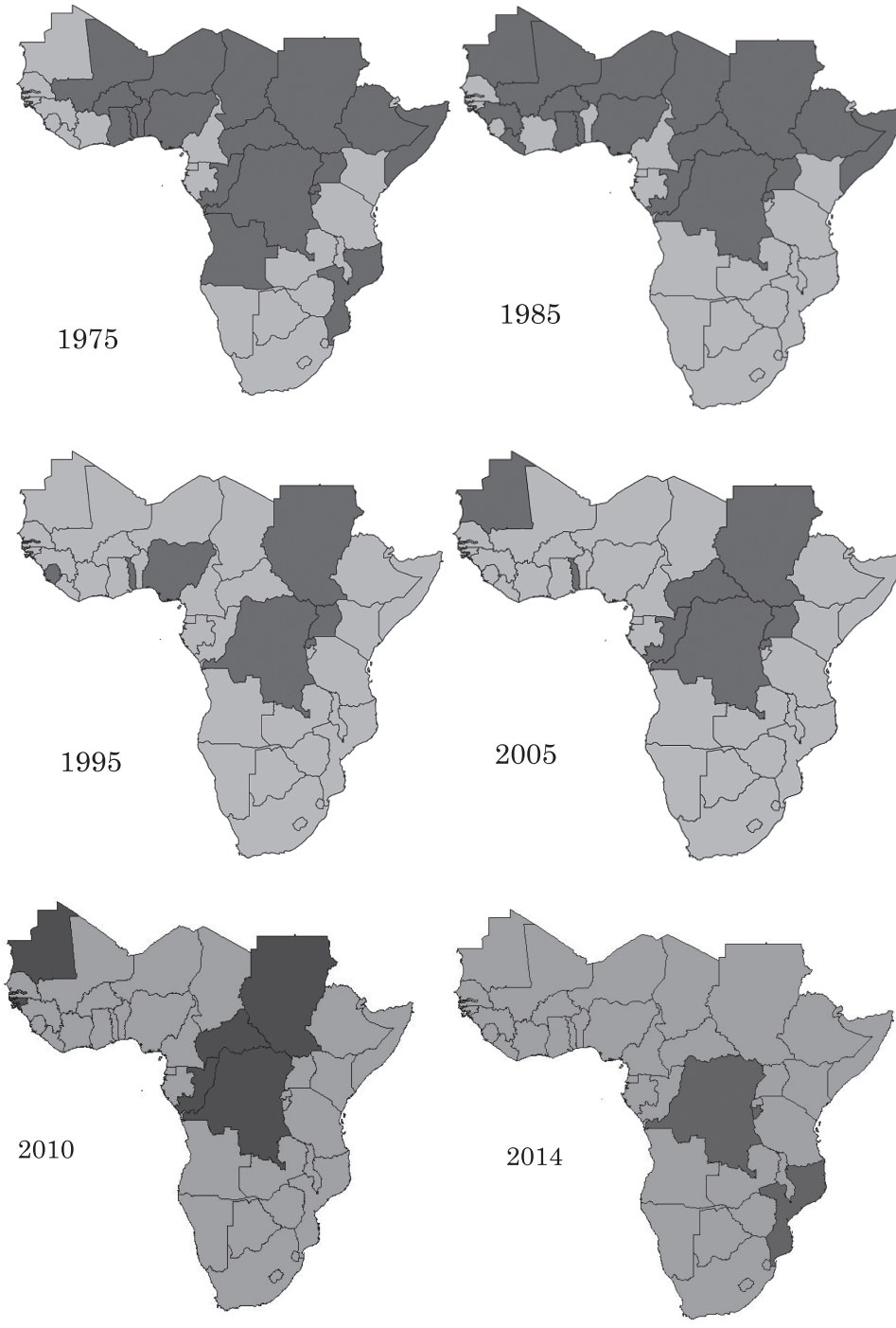
As noted above, our analysis is carried out using spatial econometrics techniques. The dependent variable is binary, so implying severe computational issues. In such a situation the likelihood function in the spatial context becomes an *N*-dimensional integral, where *N* is the number of observations (Franzese & Hays, 2009). Before specifying the empirical model, we briefly discuss this methodological point. The spatial econometric literature has developed several alternatives to the Maximum Likelihood to estimate the spatial probit model, i.e. the EM algorithm (McMillen, 1992), GMM (Pinkse & Slade, 1998) and the Bayesian MCMC (LeSage & Pace, 2009). These methodologies, however, present some shortcomings. In particular, the EM is computationally burdensome and provides inconsistent estimates, while the GMM ignores the spatial interaction effects among the error terms (for a discussion, see Elhorst, Heijnen, Samarina, & Jacobs, 2017). The Bayesian routines are available in *Matlab* (LeSage, 2005) and *R* (Wilhelm & Godinho de Matos, 2013). Furthermore, our choice of applying the Bayesian MCMC approach is in line with the recent common practice in the empirical literature (Schone, Koch, & Baumont, 2013; Seya, Tsutsumi, & Yamagata, 2012).

Following LeSage, Pace, Lam, Campanella, and Liu (2011) and Lacombe and LeSage (2018), we specify the SAR probit model, which in a panel framework is as follows:

$$\begin{aligned}\text{Military}_{it} &= \zeta + \rho \sum_{j=1}^{N} w_{ij,t} \times \text{Military}_{jt} + \delta_1 \mathbf{ECO}_{i,t-1} + \delta_2 \mathbf{GEO}_{it} + \delta_3 \mathbf{HIST}_{it} + \\ &+ \delta_4 \boldsymbol{DEM}_t + \vartheta g_t + \varepsilon_{it},\end{aligned} \tag{1}$$

where *Military* is a vector of size (*N*×1), where $i = 1, \ldots, N$ is the number of countries and t the time index $t = 1, \ldots, T$, where T is the time period length. *Military* is a dummy equal to one if the ruler is a military junta and zero otherwise. The exogenous contiguity matrix $\boldsymbol{W}_{NT}$ is based on an exogenous contiguity matrix $\boldsymbol{W}$ (*N*×*N*) that describes the dependence structure among neighboring observations. Each element w_{ij} belonging to the matrix $\boldsymbol{W}$ is equal to zero if the country i is not a neighbor of j and $1/M$ if they are neighbors, where M is the number of neighbors of i by row. $\boldsymbol{W}$ must be exogenously determined, and the neighborhood structure must be fixed over time. Geographical location is the most common structure applied, therefore the perfect candidate for us. The definition of socio-economic, political or other types of neighborhood structures incurs in potential endogeneity because the level of development of two similarly developed countries might be the outcome of a predetermined willingness to be similarly developed, e.g. through economic cooperation or similar technologies. For these reasons, and because of the evidence in

[3]The countries included in the study are: Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Central African Republic, Chad, Congo Democratic Republic, Congo Republic, Cote d`Ivoire, Equatorial Guinea, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Lesotho, Liberia, Malawi, Mali, Mauritania, Mozambique, Namibia, Niger, Nigeria, Rwanda, Senegal, Sierra Leone, South Africa, Swaziland, Tanzania, Togo, Uganda, Zambia, Zimbabwe. In spatial econometrics it is crucial to have a balanced panel, and therefore we lost several countries. For example, Penn World Tables data are not available for Eritrea, Ethiopia and Somalia, which left Djibouti without contiguous countries. For this reason we decided to drop it.



Notes: own elaborations from Hadenius and Teorell (2007).

FIGURE 1 – Military regimes (in black) in sub-Saharan Africa, selected yearsNotes: own elaborations from Hadenius and Teorell (2007).

Figure 1, in the empirical analysis, we apply only a geographical type of neighborhood structure. In the main analysis, we apply the *Queen* definition, the most used in the empirical literature, which requires a single shared boundary point at least, together with a k-nearest neighbors' criterion, with a larger number of neighbors, to check for robustness.

Unfortunately, an established econometric theory for the estimation of spatial panel probit models is not available yet, being the sketched model of Kakamu and Wago (2005) the only contribution to the topic. Nonetheless, we extended the Bayesian spatial probit model to a pooled model, by pre-multiplying the spatial weight matrix $\boldsymbol{W}$ times an identity matrix $\boldsymbol{I}_T$ of size $T\times T$: $\boldsymbol{W}_{NT} = \boldsymbol{I}_T \otimes \boldsymbol{W}$, where $\otimes$ denotes the Kronecker product. Accordingly, $w_{ij,t}$ is the element w_{ij} of $\boldsymbol{W}$ repeated for each time period t. An application of a spatial Tobit SAR model is provided in Di Porto and Revelli (2011).

The scalar ρ is the spatial autoregressive coefficient, and as we use row-normalized weights matrices, it is bounded between -1 and 1. $\boldsymbol{\delta}$ is a ($k\times1$) vector of parameters associated with the ($N\times k$) data matrices ***ECO***, ***GEO***, ***HIST***, ***DEM***, which we will specify later. The error term ε_{it} is assumed to be normally distributed with mean zero and unit variance.

Following LeSage and Pace (2009) the observed data $D = (\rho, \boldsymbol{\delta}, Military)$ is augmented by the latent variable *Military**, which cannot be observed and follows a normal distribution, such that $Military^* \geq 0$ for $Military = 1$ and $Military^* < 0$ for $Military = 0$. The data becomes $D = (\rho, \boldsymbol{\delta}, Military, Military^*)$ and this allows to reduce the complexity of the joint posterior $p(\boldsymbol{\delta}, \rho|\, Military)$ and focus instead on $p(\boldsymbol{\delta}, \rho|Military, Military^*)$. The link between *Military* and *Military** implies that knowledge of *Military** would yield knowledge of *Military* so that $p(\boldsymbol{\delta}, \rho|Military) = p(\boldsymbol{\delta}, \rho|Military, Military^*)$. The unobserved *Military** can be viewed as an additional set of parameters to be estimated in the framework of the SAR probit model.

The Bayesian approach proposed by LeSage and Pace (2009) consists of a simulation of a large sample from the posterior distribution to study the distribution and its key moments without calculating explicitly its density. The simulated values of $\boldsymbol{\delta}$, ρ and *Military* are drawn sequentially and converge to a stationary distribution identical to the target posterior density.

This sampling for the posterior distribution can be realized by a Markov Chain Monte Carlo and Gibbs sampling scheme, where we sample from the following three conditional densities $p(\boldsymbol{\delta}|\rho, Military^*)$, $p(\rho|\boldsymbol{\delta}, Military^*)$ and $p(Military^*|\rho, \boldsymbol{\delta})$. Starting with some initial values $\boldsymbol{\delta}^{(0)}$, $\rho^{(0)}$, $\text{Military}^{*(0)}$, the algorithm consists of cycling through the parameters and simulating directly from the conditional posterior distributions. Following Geweke (1991), the procedure exploits the fact that the (conditional) distribution of each element of *Military**, conditional on all other elements randomly drawn at each t cycle ($Military^*_{-t}$) that depend on their immediate predecessors can be expressed as univariate distributions with (conditional) mean and (conditional) variance. These expressions can be used to produce a draw from a univariate truncated normal distribution subject to appropriate constraints.

The resulting stochastic sequence of the parameters is a Markov representing the marginal posterior distributions of $p(\rho)$ and $p(\boldsymbol{\delta})$. According to Franzese, Hays, and Schaffer (2010), the statistics for the key parameters represent the population parameters of interest and can be obtained from the sets of the simulated values.

The conditional density for $p(\rho|Military^*, \boldsymbol{\delta})$ is:

$$p\left(\rho|Military^*, \boldsymbol{\delta},\right) \propto |I_T - \rho \boldsymbol{W}_T| exp\left(-\frac{1}{2}(\boldsymbol{Sz}-\boldsymbol{X\delta})'(\boldsymbol{Sz}-\boldsymbol{X\delta})\right)$$

subject to $Military^* \geq 0$ for $Military = 1$ and $Military^* < 0$ for $Military = 0$, $\boldsymbol{X}$ is the vector of independent variables and $\boldsymbol{\delta}$ the vector of associated coefficients.

For the normal prior of $\boldsymbol{\delta} \sim N(\boldsymbol{c}^*, \boldsymbol{T}^*)$, we can sample $p(\boldsymbol{\delta}|\rho, Military^*)$ from a multivariate normal as

$$p\left(\boldsymbol{\delta}|\rho, Military^*,\right) \propto N\left(\boldsymbol{c}^*\boldsymbol{T}^*\right),$$

where $\boldsymbol{c}^* = (\boldsymbol{X}'\boldsymbol{X}+\boldsymbol{T}^{-1})^{-1}(\boldsymbol{X}'\boldsymbol{Sz}+\boldsymbol{T}^{-1}\boldsymbol{c})$; $\boldsymbol{T}^* = (\boldsymbol{X}'\boldsymbol{X}+\boldsymbol{T}^{-1})^{-1}$; $\boldsymbol{S} = (I_T - \rho \boldsymbol{W}_T)$.[4]

[4]For a technical implementation in R, see Wilhelm and Godinho de Matos (2013).

The vector $\boldsymbol{ECO}_{i,t-1}$ includes a set of one-year lagged economic variables. First, we include the real PPP GDP per capita (*GDP pc*). Following Caruso (2010) we expect that the different sectoral shares of GDP also contribute to explain differently institutional (either formal or informal) aspects of economies. Therefore, we include the added value of the manufacturing (*manufacturing*) and mining sectors (*mining*) as a percentage of GDP. The prediction about *manufacturing* could be easily linked also to the world-system theory. In that approach, the linkage of peripheral states with the world economy is assumed to be mainly in the primary sector. In fact, peripheral states are dependent on the core states. Industrial development in this context is expected to deviate from the pattern mentioned above. Put differently, in some cases, industrialization and development of the manufacturing sector could determine a way out for peripheral states.[5] In our context, if industrialization and development of a manufacturing sector do contribute to mitigate the dependence from core-countries, they would also contribute to prevent dynamics that support the diffusion of military regimes.

To take into account the role of international organizations and multilateral agreements we consider foreign aid. A large literature (Bueno de Mesquita and Smith (2007), Wright (2009), Fleck and Kilby (2010), among others) has addressed the role of aid on democratization. In particular, Dunning (2004) shows that aid has not been relevant in the diffusion of democracy in Africa during the Cold War. The patron-client relationship between major powers and African countries had a dominant influence so that western donors were not credible in their commitment to democracy. In fact, the predictable cost of losing a client in favor of the rival would have been extremely more valuable than the benefits descending from a newborn democratic regime. Albeit some differences, a recent literature highlights that in the post-Cold War period a positive association between aid and democratization can be found [see among others Gibson, Hoffman, & Jablonski, 2015, Dietrich & Wright, 2015, Kersting & Kilby, 2014, Scott & Steele, 2011]. Other studies highlight that foreign aid may have an amplification effect (Dutta, Leeson, & Williamson, 2013), therefore consolidating existing regimes. The latter point would be in line also with the mentioned approach of the 'politics of failure' expounded in Osei-Kwame and Taylor (1984). In fact, we include the ratio between Official Development Assistance (*ODA*) and GDP. To compute this variable we follow the approach of Collier and Dollar (2002) and use the real PPP GDP from the Penn World Tables.[6] As mentioned above, because of lack of data we are not able to include military spending among the control variables.

The $\mathbf{HIST}_{it}$ vector includes dummies that capture the past colonial history, and the Soviet Union influence during the Cold War (*Soviet*). The small sample size prevents us from including all the year dummies, therefore we account for time effects g_t by means of a set of five-year dummies. We include the share of countries of the world that are coded as democratic in the Hadenius and Teorell (2007) dataset (*World share of democracies*, the **DEM** vector in equation 1). Needless to say, we excluded the sub-Saharan countries. With this variable we aim to capture the possible external influence of the 'third wave' of democratization on the military regimes in sub-Saharan Africa. One could argue that both the third wave of democratization and the Soviet influence are dependent on the collapse of the Soviet Union. Our specification controls for this breakthrough event through the period dummies. A problem of collinearity between the two variables can be excluded because the fact that a country in our dataset is influenced by the Soviet Union does not affect the share of democracies outside the same dataset. The pair-wise correlation between the two variables is not very high, being about 0.23. Finally, $\mathbf{GEO}_{it}$ is a vector including dummies for the central, eastern and western subregions of sub-Saharan Africa.

Table 1 reports the summary statistics, definitions and sources of our dataset.

[5]Wallerstein (1974) used the expression "semi-peripheral states" to identify those countries where some industrialization is taking shape thanks to FDI of multinational corporations.

[6]We first compute the real PPP GDP by multiplying *GDP per capita* by the population size. GDP is in constant 2005 dollars, while the *ODA* flows are in current US$ (source: World Bank, World Development Indicators). We converted the *ODA* into constant 2005 US$ by using the CPI index (downloaded from http://www.multpl.com/cpi/table) and applying the following formula: $ODA_{2005} = (ODA_t * CPI_{2005})/CPI_t$.

TABLE 1 – Variables, descriptive statistics and sources

Variable	Description	Source	Mean	Std. Dev.	Min	Max
Military	Dummy=1 if the government is military	Hadenius and Teorell (2007)	0.254	0.435	0	1
GDP pc	Log (GDP/population)	Feenstra, Inklaar, and Timmer (2015)	7.464	0.797	4.959	10.639
Manufacturing	Share of the manufacturing sector over GDP	UNCTAD-STAT http://unctadstat.unctad.org	11.508	6.510	0.032	36.130
Mining	Share of the mining sector over GDP	UNCTAD-STAT http://unctadstat.unctad.org	10.856	13.970	0.0048	72.123
ODA	Official Development Assistance flow/GDP (net of repayments of principal).	World Bank and Feenstra et al. (2015)	0.0558	0.066	-0.001	0.787
Central	Dummy=1 if the country is located in the centre	own calculations	0.222	0.416	0	1
East	Dummy=1 if the country is located in the East	own calculations	0.250	0.433	0	1
West	Dummy=1 if the country is located in the West	own calculations	0.417	0.493	0	1
Soviet	Dummy=1 if the country was in the sphere of influence of the Soviet Union	own calculations	0.0330	0.179	0	1
France	Dummy=1 if the country was a former French colony	own calculations	0.389	0.488	0	1
Spain	Dummy=1 if the country was a former Spanish colony	own calculations	0.028	0.164	0	1
Portugal	Dummy=1 if the country was a former Portuguese colony	own calculations	0.083	0.276	0	1
Belgium	Dummy=1 if the country was a former Belgian colony	own calculations	0.083	0.276	0	1
World share of democracies	Number of democracies/number of countries	Hadenius and Teorell (2007)	0.517	0.071	0.393	0.621

5 | RESULTS AND INTERPRETATION

Two preliminary analyses have to be undertaken before moving to the model discussed in the previous section. First, we need to ascertain the stochastic properties of the continuous variables; second, we have to decide whether our analysis is appropriately performed on the whole sample or in two subsamples.

With respect to the stochastic properties of the series, we perform a number of tests for unit-roots in a panel setting, and their results (Table 2) are consistent in pointing towards non-stationarity for *GDPpc* and *Mining*. Therefore, we will use first-differences of these variables in the estimations.

The second preliminary decision is whether to test our hypotheses in two subsamples or in a single sample in which we interact the covariates with a dummy variable discriminating between the period before and after 1989. A likelihood-ratio Chow test (Greene, 2012: 526-527) is obtained by fitting the spatial probit regression model for each of the sub-periods and then comparing the combined results with those of the model estimated for the full period. According to the results of Table 3, we can reject the hypothesis that the spatial probit regression model

TABLE 2 Stationarity tests based on the intercept

	Im-Pesaran-Shin Unit-Root Test (p-value)	Levin-Lin-Chu Unit-Root Test (p-value)	Maddala-Wu Unit-Root Test (p-value)	Pesaran's CIPS test (p-value)	Choi's Inverse Normal Unit-Root (p-value)
GDP pc	1.7096 (0.9563)	0.53434 (0.7034)	77.769 (0.3003)	-1.342 (>0.01)	1.7188 (0.9572)
Manufacturing	-2.0275 (0.0213)	-2.5751 (<0.01)	104.35 (<0.01)	-1.6703 (0.0240)	-2.1692 (0.0150)
Mining	-0.66319 (0.2536)	-0.1464 (0.4418)	90.658 (0.0678)	-1.3235 (>0.01)	-0.9898 (0.1611)
ODA	-5.1566 (<0.01)	-5.0078 (<0.01)	152.79 (<0.01)	-1.8895 (<0.01)	-5.4159 (<0.01)

TABLE 3 Likelihood-ratio Chow test

	Queen	K = 5	K = 10
Likelihood-ratio Chow test	63.7475 (df=14)	44.0709 (df=14)	43.4025 (df=14)
Two subsamples vs. whole sample	p-value < 0.01	p-value < 0.01	p-value < 0.01

applies to the whole period at any reasonable significance level independently from the spatial weight matrix used. We have to point out that estimation by using the whole sample does not allow interacting a dummy variable with the spatial coefficient. This issue has not been explored by econometric theory in the context of a spatial panel framework. The results for the whole sample, which are in line with the ones shown here, are available upon request.

To provide a deeper insight into the effect of each covariate on the dependent variable, we report both the direct and the indirect impacts. Following LeSage et al. (2011), for a spatial autoregressive probit, the impact on county *i* arising from a change in a variable x_v in county *j* is:

$$\frac{\partial Pr(\boldsymbol{y}_i=\mathbf{1})}{\partial \boldsymbol{x}_{v,j}} = \mathrm{pdf}(\eta_i) S_{ij}(\rho)\beta_v,$$

where $v = 1, \ldots, k$; $S(\rho) = (I_{N_T} - \rho \boldsymbol{W})^{-1} = I_{N_T} + \rho \boldsymbol{W} + \rho^2 \boldsymbol{W^2} + \ldots$; $\eta = S(\rho)X\beta = E(y^*)$; N_T is the number of countries N repeated T times.

It is shown that the *average total effects* are:

$$\frac{1}{N_T}\left([\mathrm{d}\{\mathrm{f}\{\eta\}\}]' i_{N_T}\right)(I-\rho)^{-1}\beta_v.$$

The *average direct effects* are as follows:

$$\frac{1}{N_T} tr\left(\frac{\partial \Pr(y_i=\mathbf{1})}{\partial x_v'}\right) =$$

$$\frac{1}{N_T}\left(\mathrm{tr}\left[D\{f\{\eta\}\} i_{N_T} + \rho[\mathrm{tr} D\{f\{\eta\}\}\boldsymbol{W} i_{N_T}] + \rho^2 \mathrm{tr}\left[D\{f\{\eta\}\}\boldsymbol{W^2} i_{N_T}\right] + \ldots\right]'\right)\beta_v,$$

where i_{NT} corresponds to a vector of ones of dimension NT; $\boldsymbol{I}$ is an NT-dimensional identity matrix; $d(\cdot)$ represents the $NT \times 1$ vector on the diagonal of a diagonal matrix $D(\cdot)$ where the non-diagonal elements are 0s, and NT is the number of countries N repeated T times. By construction, $D(\cdot)$ is symmetric. The $NT \times 1$ vector $d\{f(\eta)\}$ contains the probability density function evaluated at the predictions for each observation and the associated $N_T \times N_T$ diagonal matrix $D\{f(\eta)\}$ with $d\{f(\eta)\}$ on the diagonal. The average indirect effects are computed as the difference between the total and the direct effects.

Table 4 shows the results for the period comprised between 1978 and 1989, while Table 5 reports their direct, indirect and total effects computed from coefficients of our estimated models.

TABLE 4 – Military Dictatorships in Africa pre-1989

	queen	k=5	k=10
Intercept	-2.1670 (2.9616)	-1.6587 (2.8657)	-2.1034 (2.7889)
World Share of democracies	3.5107 (6.2127)	2.7065 (5.9579)	3.4745 (5.8287)
Diff (GDP pc)	-0.3824 (0.7300)	-0.4592 (0.7040)	-0.3994 (0.7316)
Manufacturing (t-1)	-0.0903*** (0.0223)	-0.0845*** (0.0189)	-0.0879*** (0.0226)
Diff (Mining)	0.0042 (0.0291)	0.0088 (0.0295)	0.0073 (0.0274)
ODA (t-1)	4.0985*** (1.4431)	3.9140*** (1.3762)	3.9354*** (1.4626)
Soviet	0.4825 (0.4046)	0.6019* (0.3565)	0.6099 (0.3911)
France	0.4269** (0.2166)	0.4072* (0.2078)	0.4389* (0.2248)
Spain	-1.0819** (0.5442)	-1.0492** (0.5226)	-1.0189* (0.5620)
Portugal	-0.9353** (0.3739)	-0.9876*** (0.3717)	-0.9613** (0.3827)
Belgium	2.0364*** (0.3629)	1.8785*** (0.3194)	2.0387*** (0.3886)
Centre	1.0948** (0.4305)	0.9103** (0.4238)	1.0100** (0.4861)
East	0.2966 (0.3820)	0.2783 (0.3862)	0.2514 (0.3791)
West	1.1844*** (0.3406)	1.0440*** (0.3630)	1.1496*** (0.3787)
1977-1981	-0.2364 (0.5059)	-0.3073 (0.4828)	-0.2713 (0.4617)
1982-1986	-0.0706 (0.3866)	-0.0949 (0.3654)	-0.0860 (0.3463)
Spatial coefficient, ρ	0.1052 (0.1112)	0.1762 (0.1118)	0.1137 (0.1679)
Observations	396	396	396
Log Likelihood	-187.7091	-187.3714	-187.255
AIC	409.418	412.7428	408.81

Notes:
***p<0.01, **p<0.05, *<0.10. Standard errors in parenthesis.

The spatial coefficient is insignificant in our models, which is in line with our expectations. The coefficients in Table 4 and the effects in Table 5 provide consistent results: the coefficient of each covariate has the same sign as each of the impacts. Therefore, the total effects have the same sign of direct effects. *Manufacturing* has a negative effect on the probability of being a military regime, which is consistent with the idea that industrialization brings the expansion of the middle-class, which in turn demands some political representation. *ODA* is significantly positive, consistent with the idea that during the Cold War international aids were meant to stabilize political regimes in their respective "sphere of influence". No other covariates are significant, except for some colonial and geographical dummies. In particular, the first difference of *GDPpc* is not significantly different from zero, whereas the modernization theory would have led us to expect a significantly negative sign. The same modernization theory seems confirmed by the sign and significance of *Manufacturing*, which leads us to think that the composition of GDP is more important than its level. The size of the indirect effects in the third column of Table 5 is generally negligible and not significant, showing the absence of spatial spillovers. This is due to the spatial coefficient, which is not significant and quite small. Consequently, the total effect is quite close to the direct effect.

In Table 6, for the post-Cold War period, the spatial coefficient is positive and significant at the highest level in all estimations. We interpret this evidence claiming that the reversal of the Cold War has influenced the spatial diffusion of military regimes: once the global order of the Cold War vanished, regional factors and linkages became crucial to shape institutional landscape at the regional level. Such evidence does confirm the role of the patron-client relationship in the Cold War system as envisioned above.

TABLE 5 Impacts estimates, pre-1989

a)						
Queen contiguity matrix	Direct	Std. Err.	Indirect	Std. Err.	Total	Std. Err.
World Share of democracies	0.9119	1.6096	0.0816	0.2992	0.9935	1.7792
Diff (GDP pc)	-0.0988	0.1896	-0.0099	0.0313	-0.1087	0.2085
Manufacturing (t-1)	-0.0234	0.0053	-0.0022	0.0030	-0.0256	0.0056
Diff (Mining)	0.0011	0.0076	0.0001	0.0013	0.0012	0.0084
ODA (t-1)	1.0632	0.3648	0.1145	0.1596	1.1778	0.4428
Soviet	0.1253	0.1047	0.0139	0.0252	0.1392	0.1172
France	0.1105	0.0549	0.0113	0.0176	0.1218	0.0625
Spain	-0.2805	0.1390	-0.0278	0.0411	-0.3084	0.1546
Portugal	-0.2427	0.0951	-0.0257	0.0365	-0.2684	0.1121
Belgium	0.5277	0.0814	0.0528	0.0710	0.5804	0.1083
Centre	-0.0612	0.1311	-0.0066	0.0250	-0.0678	0.1457
East	-0.0182	0.1002	-0.0024	0.0184	-0.0205	0.1114
West	0.2840	0.1089	0.0269	0.0393	0.3109	0.1199
1977-1981	0.0767	0.0991	0.0082	0.0194	0.0849	0.1101
1982-1986	0.3072	0.0846	0.0300	0.0425	0.3372	0.0978
b)						
K=5 contiguity matrix	Direct	Std. Err.	Indirect	Std. Err.	Total	Std. Err.
World Share of democracies	0.6952	1.5367	0.1318	0.4188	0.8269	1.8899
Diff (GDP pc)	-0.1184	0.1815	-0.0271	0.0566	-0.1455	0.2279
Manufacturing (t-1)	-0.0217	0.0045	-0.0049	0.0036	-0.0266	0.0062
Diff (Mining)	0.0023	0.0076	0.0005	0.0022	0.0028	0.0094
ODA (t-1)	1.0080	0.3485	0.2299	0.1847	1.2379	0.4565
Soviet	0.1549	0.0912	0.0356	0.0365	0.1905	0.1159
France	0.1048	0.0528	0.0247	0.0227	0.1295	0.0685
Spain	-0.2702	0.1337	-0.0601	0.0564	-0.3303	0.1687
Portugal	-0.2542	0.0939	-0.0559	0.0457	-0.3101	0.1178
Belgium	0.4836	0.0726	0.1070	0.0752	0.5906	0.1015
Centre	-0.0790	0.1244	-0.0199	0.0383	-0.0989	0.1557
East	-0.0243	0.0944	-0.0076	0.0275	-0.0319	0.1179
West	0.2344	0.1075	0.0485	0.0404	0.2830	0.1264
1977-1981	0.0717	0.0990	0.0149	0.0267	0.0866	0.1195
1982-1986	0.2688	0.0910	0.0578	0.0446	0.3266	0.1090
c)						
K=5 contiguity matrix	Direct	Std. Err.	Indirect	Std. Err.	Total	Std. Err.
World Share of democracies	0.8750	1.4749	0.1514	0.4469	1.0264	1.7665
Diff (GDP pc)	-0.1014	0.1860	-0.0165	0.0536	-0.1179	0.2201
Manufacturing (t-1)	-0.0223	0.0051	-0.0032	0.0046	-0.0256	0.0063

(Continues)

Diff (Mining)	0.0019	0.0070	0.0003	0.0020	0.0022	0.0083
ODA (t-1)	1.0030	0.3655	0.1592	0.2355	1.1622	0.4796
Soviet	0.1557	0.0993	0.0258	0.0417	0.1815	0.1199
France	0.1116	0.0564	0.0184	0.0293	0.1299	0.0714
Spain	-0.2594	0.1418	-0.0382	0.0649	-0.2976	0.1678
Portugal	-0.2454	0.0965	-0.0388	0.0564	-0.2842	0.1224
Belgium	0.5187	0.0834	0.0767	0.1090	0.5954	0.1150
Centre	-0.0701	0.1179	-0.0102	0.0349	-0.0803	0.1390
East	-0.0224	0.0883	-0.0031	0.0246	-0.0255	0.1043
West	0.2562	0.1184	0.0330	0.0549	0.2892	0.1301
1977-1981	0.0636	0.0967	0.0088	0.0281	0.0724	0.1144
1982-1986	0.2921	0.0901	0.0420	0.0622	0.3341	0.1086

TABLE 6 – Military Dictatorships in Africa post-1989

	queen	k=5	k=10
Intercept	4.8161*** (1.6052)	4.6422*** (1.5015)	4.8446*** (1.5044)
World Share of democracies	-9.2577*** (2.8134)	-8.8341*** (2.6154)	-8.9845*** (2.6097)
Diff (GDP pc)	-0.4606 (0.5523)	-0.5417 (0.5557)	-0.5907 (0.5454)
Manufacturing (t-1)	-0.0315*** (0.0108)	-0.0308*** (0.0104)	-0.0304*** (0.0099)
Diff (Mining)	0.0053 (0.0183)	0.0052 (0.0190)	0.0080 (0.0189)
ODA (t-1)	-1.0739 (1.1115)	-0.8393 (0.9795)	-1.0453 (0.9293)
Soviet	-0.7439 (0.7801)	-0.7143 (0.8564)	-0.7413 (0.8313)
France	0.0608 (0.1519)	0.0686 (0.1461)	0.0234 (0.1488)
Spain	-0.7512* (0.4508)	-0.7448 (0.4752)	-0.7429 (0.4528)
Portugal	-0.2167 (0.2102)	-0.2018 (0.1986)	-0.2322 (0.1929)
Belgium	1.1867*** (0.1901)	1.0847*** (0.1886)	0.9061*** (0.1846)
Centre	0.5946** (0.2553)	0.5291** (0.2499)	0.5051** (0.2557)
East	0.2835 (0.2275)	0.2245 (0.2116)	0.2277 (0.2138)
West	0.4082* (0.2327)	0.3446 (0.2227)	0.3741 (0.2277)
1992-1996	-0.7034*** (0.2359)	-0.6460*** (0.2255)	-0.6507*** (0.2237)
1997-2001	-0.5323*** (0.1939)	-0.5135*** (0.1981)	-0.5326*** (0.1867)
2002-2006	0.0560 (0.2105)	0.0204 (0.2076)	0.0577 (0.2048)
2007-2011	-0.2098 (0.1879)	-0.2028 (0.1933)	-0.1731 (0.1856)
Spatial coefficient, ρ	0.5946** (0.2553)	0.5291** (0.2499)	0.5051** (0.2557)
Observations	900	900	900
Log Likelihood	-352.2989	-351.7944	-354.8654
AIC	742.5977	741.589	747.730

Notes: ***p<0.01, **p<0.05, *<0.10. Standard errors in parenthesis.

Manufacturing confirms the results we found in Table 3, and *ODA* becomes not significantly different from zero. In the Cold War period, foreign aid was channeled towards allies with stabilization purposes. In the aftermath of the Cold War, once democratization gained momentum, although used as a tool to foster democracy, foreign aid did

TABLE 7 - Impacts estimates, post-1989

a)						
Queen contiguity matrix	Direct	Std. Err.	Indirect	Std. Err.	Total	Std. Err.
World Share of democracies	-1.7149	0.5532	-1.6227	0.6044	-3.3376	1.1007
Diff (GDP pc)	-0.0856	0.1035	-0.0796	0.0990	-0.1652	0.2006
Manufacturing (t-1)	-0.0059	0.0022	-0.0055	0.0022	-0.0113	0.0041
Diff (Mining)	0.0010	0.0034	0.0010	0.0032	0.0019	0.0066
ODA (t-1)	-0.1977	0.2067	-0.1837	0.1973	-0.3814	0.4001
Soviet	-0.1382	0.1473	-0.1282	0.1392	-0.2665	0.2837
France	0.0113	0.0288	0.0105	0.0270	0.0218	0.0554
Spain	-0.1409	0.0881	-0.1305	0.0831	-0.2714	0.1681
Portugal	-0.0404	0.0394	-0.0373	0.0381	-0.0777	0.0767
Belgium	0.2194	0.0396	0.2042	0.0379	0.4236	0.0617
Centre	-0.1302	0.0458	-0.1235	0.0499	-0.2537	0.0916
East	-0.0985	0.0371	-0.0930	0.0393	-0.1915	0.0732
West	0.0105	0.0392	0.0101	0.0376	0.0206	0.0763
1992-1996	-0.0389	0.0353	-0.0366	0.0346	-0.0755	0.0691
1997-2001	0.1102	0.0496	0.1034	0.0489	0.2136	0.0952
2002-2006	-1.7149	0.5532	-1.6227	0.6044	-3.3376	1.1007
2007-2011	-0.0856	0.1035	-0.0796	0.0990	-0.1652	0.2006
b)						
K=5 contiguity matrix	Direct	Std. Err.	Indirect	Std. Err.	Total	Std. Err.
World Share of democracies	-1.6224	0.5140	-1.8009	0.6434	-3.4233	1.1018
Diff (GDP pc)	-0.0993	0.1042	-0.1088	0.1163	-0.2081	0.2183
Manufacturing (t-1)	-0.0057	0.0020	-0.0062	0.0024	-0.0119	0.0042
Diff (Mining)	0.0009	0.0035	0.0010	0.0040	0.0020	0.0074
ODA (t-1)	-0.1550	0.1810	-0.1726	0.2020	-0.3276	0.3801
Soviet	-0.1301	0.1566	-0.1451	0.1803	-0.2752	0.3344
France	0.0123	0.0270	0.0142	0.0304	0.0265	0.0571
Spain	-0.1376	0.0903	-0.1489	0.0964	-0.2865	0.1832
Portugal	-0.0375	0.0371	-0.0402	0.0415	-0.0777	0.0776
Belgium	0.1982	0.0355	0.2169	0.0403	0.4151	0.0618
Centre	-0.1190	0.0444	-0.1329	0.0566	-0.2518	0.0977
East	-0.0944	0.0385	-0.1053	0.0468	-0.1997	0.0828
West	0.0036	0.0385	0.0038	0.0428	0.0074	0.0808
1992-1996	-0.0371	0.0359	-0.0413	0.0412	-0.0784	0.0763
1997-2001	0.0977	0.0486	0.1067	0.0535	0.2044	0.0994
2002-2006	-1.6224	0.5140	-1.8009	0.6434	-3.4233	1.1018
2007-2011	-0.0993	0.1042	-0.1088	0.1163	-0.2081	0.2183

(Continues)

c)

K=10 contiguity matrix	Direct	Std. Err.	Indirect	Std. Err.	Total	Std. Err.
World Share of democracies	-1.7250	0.5598	-2.5008	0.8968	-4.2258	1.3759
Diff (GDP pc)	-0.1133	0.1058	-0.1621	0.1551	-0.2754	0.2578
Manufacturing (t-1)	-0.0058	0.0021	-0.0084	0.0032	-0.0143	0.0050
Diff (Mining)	0.0015	0.0036	0.0023	0.0055	0.0038	0.0090
ODA (t-1)	-0.1994	0.1830	-0.2857	0.2679	-0.4852	0.4445
Soviet	-0.1422	0.1617	-0.2069	0.2424	-0.3491	0.4004
France	0.0044	0.0286	0.0066	0.0421	0.0110	0.0704
Spain	-0.1440	0.0936	-0.2051	0.1308	-0.3491	0.2193
Portugal	-0.0448	0.0376	-0.0635	0.0540	-0.1083	0.0902
Belgium	0.1726	0.0377	0.2466	0.0517	0.4192	0.0756
Centre	-0.1247	0.0458	-0.1812	0.0737	-0.3059	0.1146
East	-0.1021	0.0390	-0.1478	0.0607	-0.2499	0.0955
West	0.0115	0.0400	0.0168	0.0598	0.0284	0.0992
1992-1996	-0.0329	0.0362	-0.0477	0.0535	-0.0807	0.0887
1997-2001	0.0970	0.0511	0.1378	0.0734	0.2348	0.1209
2002-2006	0.0439	0.0422	0.0614	0.0603	0.1054	0.1013
2007-2011	-1.7250	0.5598	-2.5008	0.8968	-4.2258	1.3759

not have a significant role in advancing this political regime. The *World share of democracies* becomes significantly negative, putting the changes in political regimes in Africa in line with global trends. Among the dummy variables, geographical ones lose significance, whereas colonial origins have similar effects, although at a lower level of significance.

In Table 7, indirect, direct and total impacts show the same sign across them (all positive or all negative). We do not observe systematic differences between direct and indirect effects across the three specifications. In the pre-1989 sample, the ratio between the direct and the indirect effect is quite large, often larger than 10 because of the negligible spatial dependence. In the post-1989 sample, the same ratio is smaller, typically close to 1 for every variable suggesting that indirect effects become as important as direct effects after 1989, strengthening spatial interrelations that make the nature of countries' regime type correlation more complicated. As a consequence of the spatial coefficient, the effect of changes in the neighbors' covariates in the considered country's probability of having a military rule becomes more important. This evidence reinforces the idea that before 1989 spillovers were not significant enough.

Based on Table 7a, the Manufacturing variable exerts a negative direct and indirect effect on the probability of military dictatorship, implying a direct effect of a 0.59% decrease in probability of dictatorship for every unit share increase of the manufacturing sector, and an indirect effect around 0.55%, combining for a total effect around 1.1%.

A percentage point increase of the *World share of democracies* has a direct effect of around 1.71% decrease in the probability of dictatorship and an indirect effect around -1.62%, combining for a total effect of -3.34%.

6 | CONCLUSIONS

This paper provides a contribution to the literature focused on the nature of political regimes and how they change and transform. In particular, we analyze in depth the diffusion of a specific regime (military autocracies) in sub-Saharan Africa in the period 1978-2014.

This work exploited the definition of military regimes developed in Hadenius and Teorell (2007) that emphasizes the *de facto* influence the military has on political power by controlling civilian leaders behind the scenes. In addition, we also applied a recently developed spatial estimator, the Bayesian SAR probit. To control for the longitudinal dimension of the data we have extended it to a pooled model. Findings show that a statistically significant spatial autocorrelation between military governments is evident only after 1989. This suggests that the reversal of the Cold War has influenced the spatial diffusion of military regimes. The plausible interpretation is that during the Cold War in sub-Saharan Africa is the patron-client relationship between major powers and African countries was crucial to shape institutional regimes. In fact, the existence of such patron-client relationships between major powers and African countries explain why spatial dependence turns to be more relevant once the Cold War system had been removed. Overall, this confirms the findings emerging from a large literature on the spatial spillover of institutions.

The coefficients associated with the covariates provide interesting insights on the economic correlates of a military dictatorship. The foregoing results are in line with the evidence of a larger manufacturing sector associated with a smaller probability of a military regime. We, therefore, claim that the expansion of productive sectors decreases the probability of descending into a military autocracy. This result also confirms that industrialization can help states to reduce dependence from the primary sector so preventing at the same time dynamics that support the diffusion of military regimes. Interestingly, among covariates, we also found a positive association between foreign aid and the military government only during the Cold War. The reasonable interpretation is that in that period foreign aid was channeled towards allies irrespectively of their internal regime.

Finally, we would claim that our findings highlight that local dynamics in economically fragile regions would shape institutions and governance of polities if and only if a dominant global regime is not effective. Questions arise on whether such evidence would be confirmed in the case of a higher level of development.

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