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Militarization, globalization and liberal democracy: a nexus?

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Abstract

Purpose – Using composite indices, the paper examines the nexus between militarization, globalization and liberal democracy. The democratic peace theory, the conflict inhibiting effects of international trade – a key and dominant facet of globalization – and the democracy promoting globalization hypothesis form the theoretical underpinnings of the empirical investigation.

Design/methodology/approach – To probe into the issue at hand, the paper adopts a dynamic panel VAR estimation procedure. Given the usual data constraints, the sample consists of 113 countries, and the estimations span the period 1995–2019.

Findings – The findings from the dynamic panel VAR estimations suggest the presence of a negative and statistically significant nexus between the level of globalization and the level of militarization. No statistically traceable nexus between globalization and liberal democracy was found.

Research limitations/implications – The findings offer empirical support to the hypothesis that the strong links of interdependence shaped by globalization reduce the need for military preparedness. The results lead to a tentative inference in favor of the *doux commerce* thesis. Nonetheless, given that the estimations span a historically specific period – the entire post-bipolar era – the inferences that stem from the findings should be treated with caution.

Originality/value – To the best of the authors' knowledge, the composite indices Bonn International Centre for Conflict Studies (BICC) militarization index, the globalization index of the Swiss Economic Institute (Konjunkturforschungsstelle) (KOF), LibDem, polyarchy have not hitherto been jointly used in previous studies to examine the nexus between militarization, globalization and liberal democracy.

Keywords Militarization, Globalization, Liberal democracy, Panel VAR

Paper type Research paper

Introduction

The Russian invasion of Ukraine in February 2022 has raised a cohort of challenging issues and concerns of strategic, geo-economic and geopolitical nature that cannot be examined in any adequacy within the confines of a single paper (*inter alia*: Costa and Barbé, 2023; Genschel, 2022; Kordan, 2022; Marples, 2022; Tampubolon, 2022). In some respects, it could be argued that the invasion and the ongoing war can be regarded as the formal beginning of the meta or post post-bipolar era in international affairs. A collateral consequence of the invasion is the blow struck to the dominant German policy “*Wandel durch Handel*” [1] of the past decades that characterized Germany's stance and consequently EU's policy vis-à-vis Russia



and for that matter China (Blumenau, 2022; Rahr, 2007; Brummer and Oppermann, 2016). Its roots can be traced back to the Cold War's *Ostpolitik* (Stent, 1982; Pittman, 1992). In brief, the main idea behind the "*Wandel durch Handel*" policy was that closer commercial and economic ties with rising powers such as China and Russia will prove to be a tensions- and frictions-defusing mechanism. Moreover, it could even act as a gentle facilitator with the potential to gradually push countries toward freer and more open political systems. The *Zeitenwende* [2] speech in the Bundestag by the German Chancellor Olaf Scholz epitomizes the abrupt change in the "*Wandel durch Handel*" policy forcibly brought about by the Russian invasion (*inter alia*: Biscop, 2023; Fiott, 2023; Economou and Kollias, 2023; Bosse, 2022).

The idea that trade, commerce and in broader terms economic interdependence have such a smoothing effect on international bilateral or multilateral relations is by no means new. For instance, in Plutarch's *Moralia*, we read that the benefits of sea trade include "... bringing about cooperation and friendship ... without the exchanges made possible by the sea ... man would be ... savage and destitute ..." (in Irwin, 1996, p. 11). In a similar vein, Montesquieu in *The Spirit of Laws* (1748) observes that "Peace is the natural effect of trade. Two nations who traffic with each other become reciprocally dependent" (p. 346) [3] and hence engaging in armed conflict would prove to be mutual damaging. Indeed, the World Trade Organization (WTO) lists the promotion of peace as the first of the ten benefits of international trade. Briefly, increased international trade and the concomitant economic interdependence make conflict too costly. The possible trade losses that would ensue for both parties reduce the willingness of both sides to engage in armed confrontation. Hence, countries that engage in international trade are more likely to be peaceful or less likely to resort to armed confrontation as a means of resolving disputes emanating from rivalries that include trade competition and trade wars, as the current one between the two largest economies globally (*inter alia*: Chong and Li, 2019; Iqbal *et al.*, 2019; Kohatsu, 2023; Zaman, 2023a, b). The peace-inducing effect of international trade has long attracted considerable attention in the relevant literature, and it is by no means an unchallenged thesis (*inter alia*: Beyene, 2015; Hegre *et al.*, 2010; Martin *et al.*, 2008; Gartzke and Li, 2003; Barbieri, 2002; Barbieri and Levy, 1999). Critically engaging and summarizing this strand of the literature is beyond the scope of the present study. For our purposes here, it suffices to note that this nexus is one of the most studied and debated issues in the relevant theoretical as well as empirical literature (Mansury *et al.*, 2023; Gartzke and Lupu, 2012). Although the reported empirical findings do not allow for firm conclusions as noted by Paganelli and Schumacher (2019), nonetheless most findings point to a positive association between commerce and peace. This nexus constitutes one of the research questions that the present study probes into, hoping to offer further additional evidence in the extant relevant literature via the use of composite indices.

Rooted in Immanuel Kant's work "*Perpetual Peace: A Philosophical Sketch*" first published in 1795, the democratic peace theory postulates that as the number of democracies increases globally, this gradually leads to a more peaceful world and eventually to Kant's perpetual peace. Seminal works in this strand of the literature include Small and Singer (1976), Doyle (1983a, b), Rummel (1983), Gartzke (1998), Cederman (2001), Cederman and Rao (2001), Choi (2011) and many others. Briefly, the democratic peace theory postulates that democracies are less prone to resort to military violence to resolve international interstate disputes. Given their political pluralism, competitive elections and the accountability of policy and decision-makers, resorting to war is a politically unattractive option. Hence, they are less likely to allocate scarce resources to the military. The nexus between liberal democracy and conflict proneness is another of the research questions empirically addressed herein. If the probability of engaging in armed confrontation is lower in the case of liberal democracies, then the research hypothesis is that one would intuitively expect that they will generally tend to allocate fewer resources to military preparedness which is a prerequisite for engaging in an armed confrontation. Needless to point out that just as in the case of the peace promoting

international trade thesis, the democratic peace assertion is not universally accepted and has attracted considerable criticism (*inter alia*: Layne, 2014; Rosato, 2003; Dafoe, 2011; Narang and Nelson, 2009).

In the sections that follow, we investigate empirically these two theoretical propositions. Specifically, we examine the presence or not of a causal nexus between four composite indices that quantify globalization, the level of countries' military preparedness and their democratic polity. These are the KOF globalization index [4], the varieties of democracy [5] (henceforth V-Dem), liberal democracy and polyarchy indices and the Bonn International Centre for Conflict Studies [6] (henceforth BICC) Global Militarisation Index (GMI). All indices have been used extensively in the relevant literature (*inter alia*: Potrafke, 2015; Caruso and Biscione, 2022; Boese *et al.*, 2022; Fjelde *et al.*, 2021). All indices used in this study are briefly presented in the section that follows. The section that follows includes a bird's eye view of the empirical methodology employed and a discussion of the findings; the last section concludes the paper.

The indices: a descriptive comparative presentation

Conflict, be it interstate or intrastate, is a salient feature of the international system. As previously noted, preparing for or indeed engaging in armed confrontation requires the allocation of scarce resource to the military. The composite GMI is an index of an annual frequency aimed to encapsulate the burden of the defense sector. It is constructed and published by the BICC [7] and is available from 1990 onward. It takes values on a scale ranging from 0 to 1,000. Higher GMI values indicate higher levels of militarization and consequently military preparedness. Relative to the military burden – that is, military spending as a share of GDP – that just reflects expenditures, GMI is a more nuanced measure of militarization that reflects “the relative weight and importance of a country's military apparatus in relation to its society as a whole” [8] (Mutschler and Bales, 2020). It is derived from primary data grouped in three broad categories: expenditures, personnel and weapons. Examples of data that are used in the construction of GMI include military expenditures as percentage of GDP as well as in relation to health spending, military and paramilitary personnel in relation to the total population, paramilitary personnel in relation to physicians and heavy weapons in relation to population [9]. As noted by Gartzke and Lupu (2012), the nexus between economic interdependence and military conflict is among the most studied and debated in the extant relevant literature (p. 115). A prerequisite for engaging in military conflict is the allocation of scarce resources to the military. The composite BICC militarization index captures this allocation and, in a sense, the concomitant opportunity cost of the resources that are diverted from other potentially socially more preferable uses to building military capabilities. Thus, the research questions addressed by the present study, that is the nexus between interdependence and conflict and between liberal polity and conflict, can be examined via the use of this more nuanced index of military preparedness rather than the more traditional one of the defense burden, that is military spending expressed as a share of GDP.

As can be seen from the data presented in Table 1, for the period under scrutiny here, *that is* 1995–2019, Israel, Singapore and Oman are the countries with the higher average GMI score, while Iceland, Costa Rica and Panama are the countries with the lowest average. Elucidating the factors that explain countries' GMI score is well beyond the scopes of the present paper. As an example, it suffices to say that, for instance, Iceland and Costa Rica do not maintain a standing army, while Israel faces multiple security challenges that compel it to maintain a strong, well-equipped military, and hence the lowest and highest GMI scores, respectively. For the purposes of this study, GMI is introduced in the estimations as an index that captures the degree of tension and friction in the international security environment. The higher the tension between the actors of the international system, the higher the levels of military preparedness with the concomitant allocation of resources. Building military

						Nexus between militarization and globalization
<i>Highest GMI</i>		GMI	KOF	LibDem	Polyarchy	
	Israel	417.52	73.34	0.67	0.75	
	Singapore	388.92	80.76	0.30	0.39	
	Oman	349.64	56.67	0.12	0.13	
	S. Arabia	331.92	61.43	0.04	0.02	
	Jordan	323.28	70.61	0.20	0.24	
<i>Lowest GMI</i>						61
	Iceland	3.16	71.27	0.80	0.87	
	Costa Rica	15.92	64.20	0.85	0.90	
	Panama	38.16	64.18	0.57	0.76	
	Mauritius	53.08	63.42	0.71	0.82	
	Malta	55.04	72.39	0.61	0.79	
<i>Highest KOF</i>						
	Belgium	133.80	88.01	0.82	0.88	
	Switzerland	169.04	87.61	0.85	0.89	
	Sweden	182.72	87.31	0.88	0.91	
	Netherlands	144.36	86.96	0.82	0.87	
	UK	165.36	86.71	0.80	0.86	
	Denmark	176.36	86.46	0.88	0.91	
<i>Lowest KOF</i>						
	Burundi	208.04	31.86	0.14	0.25	
	Chad	185.28	35.82	0.10	0.27	
	Guinea-Bissau	189.56	36.41	0.26	0.43	
	Niger	103.28	37.54	0.38	0.52	
	Sierra Leone	92.32	37.64	0.26	0.45	
<i>Highest LibDem</i>						
	Denmark	176.36	86.46	0.88	0.91	
	Sweden	182.72	87.31	0.88	0.91	
	Germany	137.36	84.79	0.86	0.90	
	Norway	192.40	83.55	0.86	0.90	
	Costa Rica	15.92	64.20	0.85	0.90	
<i>Lowest LibDem</i>						
	S. Arabia	331.92	61.43	0.04	0.02	
	China	134.48	57.91	0.06	0.09	
	Tajikistan	96.68	42.78	0.06	0.21	
	Azerbaijan	246.96	52.81	0.07	0.22	
	Chad	185.28	35.82	0.10	0.27	
<i>Highest polyarchy</i>						
	Sweden	182.72	87.31	0.88	0.91	
	Denmark	176.36	86.46	0.88	0.91	
	Costa Rica	15.92	64.20	0.85	0.90	
	Germany	137.36	84.79	0.86	0.90	
	Norway	192.40	83.55	0.86	0.90	
<i>Lowest polyarchy</i>						
	S. Arabia	331.92	61.43	0.04	0.02	
	China	134.48	57.91	0.06	0.09	
	Oman	349.64	56.67	0.12	0.13	
	Rwanda	162.56	38.98	0.12	0.18	
	Iran	212.52	46.63	0.15	0.20	
Source(s): Authors' calculations						Table 1. Countries with the highest and lowest average score in GMI, KOF, LibDem and polyarchy during 1995–2019

strength acts as a deterrent against actual or potential adversaries. Countries that face acute external or domestic security challenges such as conflict with other state or non-state entities or armed insurgencies exhibit higher levels of militarization. Being a more nuanced measure of military preparedness, BICC's GMI has been used in empirical studies instead of the more

traditional measure of the defense burden, that is military spending as a share of GDP (Caruso and Biscione, 2022; Kollias and Tzeremes, 2022). In the next section that contains the empirical investigation, the defense burden (*Milex* in the tests that follow) and GMI are used interchangeably in the models in order to test the robustness and consistency of the results yielded by the estimations.

In the context of the *doux commerce* notion as coined by Montesquieu, that is, that trade and interdependence act as deterrents to conflict and consequently the need for military preparedness, the second composite index used in the empirical investigation quantifies the levels of globalization. Strong economic and trade ties along with interdependence are the most prominent features of globalization. However, as universally acknowledged, globalization is a multidimensional process that is not limited to the economic sphere (*inter alia*: Dreher *et al.*, 2008; Caselli, 2012; Gygli *et al.*, 2019; Dreher, 2006). Its multidimensionality is evident in the diversity of flows and exchanges that are not limited to goods and capital. Among others, they include the flow and exchange of ideas, consumer habits, increased interpersonal contact through traveling and social media interaction that nurture the cross-fertilization between countries and societies in many different levels and spheres. According to Keohane and Nye (2000), the multidimensional features of globalization include three major spheres: the economic, the social and the political. The composite KOF index of globalization quantifies these three main dimensions of globalization (Dreher, 2006; Gygli *et al.*, 2019; Dreher *et al.*, 2008). The aggregate KOF index ranks countries according to the score they achieve in terms of their degree of globalization, with 100 being the highest possible score. A variety of metrics are used to construct the index. For example, toward quantifying the economic dimension variables such as FDI flows, the presence/absence of trade restrictions is included. For the social dimension variables such as international tourism, foreign population living in the country are taken into account. Finally, the political dimension is quantified using the number of foreign embassies, participation in UN treaties and peace missions, membership of international organizations. In a nutshell, the KOF index is used in the empirical analysis that follows to encapsulate and quantify the degree of interdependence between countries in the international system. Moreover, it reflects countries' integration in the international system. As already pointed out, the question of whether interdependence encourages states to resolve differences through diplomatic means rather than through conflict, is a theme that has attracted substantial theoretical and empirical attention in the extant literature (*inter alia*: Mansury *et al.*, 2023; Gartzke and Lupu, 2012; Hegre *et al.*, 2010; Kollias and Paleologou, 2017; Solarin, 2018).

As can be seen in Table 1, for the period examined here, Belgium, Switzerland and Sweden are the countries with the highest average score in the aggregate KOF globalization index. Burundi, Chad and Guinea-Bissau are the three with the lowest KOF score, followed by Niger and Sierra Leone. The hypothesized possible empirical association between the KOF and the GMI indices is based on the conflict inhibiting effects of international trade and interdependence that are augmented as a country's integration in the multifaced process of globalization deepens. Albeit not an unchallenged thesis, it has been shown that the openness of the economy and an increased participation in international trade reduce the probability of conflict and also yield domestic benefits via reductions in military spending, with the concomitant welfare effects that decrease internal societal tensions (*inter alia*: Solarin, 2018; Seitz *et al.*, 2015; Huang and Throsby, 2011; Kollias and Paleologou, 2017). In a similar vein, it has been shown that globalization can exert an influence on national democratic governance. Increasing economic openness and participation in international trade and global financial markets has the potential to stimulate improvements in democracy (*inter alia*: Eichengreen and Leblang, 2008; Rudra, 2005; Li and Reuveny, 2003; Kollias and Paleologou, 2016). In brief, the exchange of goods and services, along with greater proximity between people and societies facilitated by the multidimensionality of the globalization

process, acts as a conduit for the exchange of ideas. A more diverse stock of ideas encourages political competition, political rights and civil liberties. All are quintessential features of democratic polity and governance. Moreover, in the postulated context of the democratic peace theory, as the number of democracies increases, this has a dampening effect on conflict and the concomitant military preparedness through the allocation of resources to the military as captured by the GMI.

As noted in the introduction, to quantify democratic polity, we turn to the indices constructed and publicized by the V-Dem project. To this effect, two indices are selected: the liberal democracy index (henceforth *LibDem*) and the *polyarchy* index. In the empirical estimations that follow in the next section, both are used interchangeably to test the robustness of the results yielded and check whether they are affected by the index used in the estimated models. The former, the *LibDem* index, is a composite measure [10] of liberal democracy. It takes values in the scale 0–1. It allows for the multidimensionality of democracy by incorporating aspects such as electoral democracy, rule of law and independent judiciary, constitutional protection of civil liberties, effective checks and balances on the executive. In the V-Dem project, the liberal democracy principle “*emphasizes the importance of protecting individual and minority rights against the tyranny of the state and the tyranny of the majority . . . takes a “negative” view of political power insofar as it judges the quality of democracy by the limits placed on government . . . achieved by constitutionally protected civil liberties, strong rule of law, an independent judiciary, and effective checks and balances that, together, limit the exercise of executive power . . . the index also takes the level of electoral democracy into account.*”

The second V-Dem index used herein, that is *polyarchy*, is an index that seeks to quantify the “*electoral principle of democracy . . . making rulers responsive to citizens, achieved through electoral competition . . . under circumstances when suffrage is extensive . . . elections are clean and not marred by fraud or systematic irregularities . . . affect the composition of the chief executive . . . in between elections, there is freedom of expression and an independent media capable of presenting alternative views on matters of political relevance.*” Just as in the case of the GMI and KOF indices, the countries with the highest and lowest average scores in these two V-Dem indices are presented in Table 1, along with their scores in the other indices used in the empirical estimations that follow in the next section.

Methodology, findings and discussion

To examine the nexus between the indices presented above, we resort to the use of panel data that includes 113 countries [11] and spans the period 1995–2019. The period choice was imposed by the usual data constraints and the inevitable balancing choices between T and N they impose. To probe into the empirical association between the composite indices that quantify globalization (KOF), militarization (GMI) and democratic polity (*LibDem*/*polyarchy*), four different models are used to study the nexus between the covariates. Model 1 includes the variables GMI, KOF and *LibDem*; Model 2 includes GMI, KOF and *polyarchy* that is used as an alternative measure of democracy to the *LibDem* variable. In Model 3, instead of the GMI, the defense burden (*Milex*) is used to test the robustness of the results yielded and check whether they are affected by the variable used in the estimated models. As previously noted, the defense burden, that is military spending as a share of GDP, is the traditional variable used to capture the value of resources allocated to the defense sector [12]. The other variables used in Model 3 are the KOF globalization index and *LibDem*. Finally, apart from the *Milex* and KOF variables in model 4, once again *polyarchy* replaces *LibDem* as the measure of democratic polity. The basic descriptive statistics of all the variables used in the estimations are presented in Table 2.

Sigmund and Ferstl (2021) proposed a panel vector autoregressive model (PVAR) with fixed effects based on the classical PVAR model of Holtz-Eakin *et al.* (1988). This new alternative

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approach can include several lags, endogenous and exogenous, that are predetermined and strictly variables. The fixed effects framework is expressed as [equation \(1\)](#):

$$\xi_{i,t} = e_i + \sum_{k=1}^{\rho} L_k \xi_{i,t-k} + Ts_{i,t} + Uc_{i,t} + b_{i,t} \tag{1}$$

where $\xi_{i,t-1}$ shows the endogenous variables, $s_{i,t}$ displays the predetermined (weakly) and $c_{i,t}$ demonstrates the strictly exogenous variables at time t . By applying GMM-PVAR, we can obtain a robust approach to explore the intricate causal linkages among militarization, globalization and liberal democracy. The GMM-PVAR pattern offers several advantages that address key considerations in this respect. Firstly, it guarantees the endogenous linkage among the covariates, effectively mitigating any potential bias arising from endogeneity. Secondly, the incorporation of lags in [equation \(2\)](#) allows for capturing both short-term and long-term dynamics, accommodating the complex temporal dependencies that may exist among the examined countries. In addition, the GMM-PVAR framework of empirical estimation accommodates the possibility of heterogeneity in the estimated coefficients, accounting for variations that may arise across different contexts or regions, as emphasized by [Sigmund and Ferstl \(2021\)](#). Moreover, incorporating the first difference or the forward orthogonal transformation model, fixed effects can be removed. Hence, a generalized method of moments (GMM) technique can be more powerful tool than fixed effects since we can employ the coefficients as instrumentals variables. Considering this, [Sigmund and Ferstl \(2021\)](#) modulated and improved [Binder *et al.* \(2005\)](#) estimator's by adding more lags for the endogenous, predetermined and strictly exogenous variables. Consequently, [equation \(1\)](#) can be modified by utilizing the first difference or the forward orthogonal transformation:

$$\Delta \xi_{i,t} = e_i + \sum_{k=1}^{\rho} L_k \Delta \xi_{i,t-k} + T\Delta s_{i,t} + U\Delta c_{i,t} + \Delta b_{i,t} \tag{2}$$

where Δ is the first difference or the forward orthogonal transformation. GMI (or *Milex*), KOF and *LibDem* (or *polyarchy*) are denoted by $\Delta \xi_{i,t}$ (lagged endogenous variables), while there are not weakly exogenous ($\Delta s_{i,t}$) and strictly exogenous variables ($\Delta c_{i,t}$) in our study. Furthermore, we can test the stability of PVAR procedure using the modulus of each eigenvalue of the calculated model. The existence of stability is valid when all the eigenvalues are inside the unit circle (less than one). The decision of lag order is based on [Andrews and Lu's \(2001\)](#) model. There are three alternative criteria adapted from the moment selection criteria (MMSC): the MMSC-BIC (Bayesian information criterion) or the MMSC-HQIC (Hannan-Quinn information criterion). In our study, we employed the MMSC-BIC to select the lag length ([Andrews and Lu, 2001](#); [Sigmund and Ferstl, 2021](#)). The findings disclose $p = 1$ for all models.

As reported in [Table 3](#) and for the sake of completeness, some typical pretests are applied to verify the estimation of the GMM-PVAR model. In particular, [Table 2](#) shows two of the

Table 2.
Descriptive statistics

Variables	Max	Min	Mean	Std.dev
GMI	468	2	164.82	79.21
KOF	91	22	62.83	15.51
<i>LibDem</i>	0.89	0.03	0.48	0.27
<i>Polyarchy</i>	0.92	0.02	0.59	0.25
<i>Milex</i>	14.3	0	1.91	1.61

Source(s): Authors' estimations

most popular tests for panel unit root tests (Im *et al.*, 2003; Pesaran, 2007), panel cointegration tests (Kao, 1999; Westerlund, 2007) and Pesaran's (2004) test that estimates the cross-sectional dependence (CD) [13]. Starting from the panel unit root tests, it is evident that all variables are stationary at 1 and 5% significance level at first difference, rejecting the null hypothesis of a unit root. The null hypothesis of no cointegration is also rejected since the estimated values of two panel cointegration tests show statistical significance. Finally, Pesaran's (2004) test reveals cross-sectional dependence at 1% significance level.

The results yielded from the estimation of the GMM-PVAR for all four models are reported in Tables 4–7. As a first broad observation, they are quite consistent in the empirical association that they indicate between the composite indices. Worth noting is that all variables in all models are positively affected by their past values (–1) at the 1% significance level. In all estimated models, the two V-Dem variables – LibDem and polyarchy – that are used interchangeably as measures of countries' democratic polity do not display any statistically significant association with any of the other variables. Neither with the KOF globalization index, nor with BICC's GMI or the more traditional variable – Milex – that measures the value of resources allocated to the military. Our findings suggest that while globalization may create favorable conditions for democracy, it does not guarantee its promotion, or for that matter consolidation. This finding is consistent with previous results such as those by Inglehart and Welzel (2010), who argue that economic development and cultural values play a more significant role in the democratization processes. In view of this, it can be argued that the results do not offer any support in favor of the democracy-inducing features of globalization, neither do they point to a reverse nexus. Nor do

Panel A – tests for panel unit root

Variables	Pesaran (2007)-(1st diff.)	Im <i>et al.</i> (2003)-(1st diff.)
GMI	–3.594***	–2.775***
Milex	–3.471***	–2.103**
KOF	–2.884***	–2.657***
LibDem	–3.643***	–2.672***
Polyarchy	–2.742***	–2.849***

Panel B – tests for panel cointegration

Kao (1999) test: –4.761***
Westerlund (2007) test: –2.862***

Panel C – test for cross-sectional dependence

Pesaran (2004) CD test: 20.267***

Note(s): *** and ** depict significance at 1 and 5% level, respectively. The variables are integrated in first differences

Source(s): Authors' estimations

Table 3.
Tests for panel unit
root, cointegration and
cross-sectional
dependence

Variables	GMI _(t)	KOF _(t)	LibDem _(t)
GMI _(t-1)	0.707***	–0.012	0.014
KOF _(t-1)	–0.172***	0.911***	0.036
LibDem _(t-1)	0.032	0.015	0.824***

Note(s): *** depicts significance at 1% level

Source(s): Authors' estimations

Table 4.
Findings for the GMM-
PVAR model 1

the results support the hypothesis that democracy, via the channels postulated by the democratic peace thesis, reduces militarization and military preparedness with the concomitant allocation of resources to the military as quantified by the GMI variable.

In the case of the aggregate KOF index of globalization and the two variables that measure the allocation of resources to the military, namely, BICC's militarization index (GMI) and the defense burden (Milex), the estimations indicate the presence of a strong, statistically significant connection. As seen in [Tables 4 and 5](#), the degree of globalization exerts a powerful negative influence on the levels of militarization. In other words, as countries' integration into the multidimensional process of globalization, reflected in the values of the aggregate KOF index, increases, the degree of militarization decreases. This means that comparatively fewer resources are allocated to the military, as reflected in countries' GMI scores. These findings provide empirical support for the hypothesis that increased interdependence induced by globalization reduces the need for military preparedness. Resorting to armed confrontation as a means of resolving disputes becomes a costly option for both parties involved. Consequently, the necessity of allocating scarce resources to the military diminishes. The findings by [Gartzke and Lupu \(2012\)](#) show that increased economic interdependence and globalization contribute to a decrease in the likelihood of militarized conflicts between countries. As already noted, the principal underlying idea of this line of argumentation is that countries engaged in economic and trade networks have more to lose from armed conflicts, leading to a reduced emphasis on military preparedness and a decline in military spending. Although the reported findings offer empirical support to this hypothesis, nonetheless, as [Paganelli and Schumacher \(2019\)](#) observe, they do not allow for firm and unchallenged conclusions since their empirical research methodologies have come under scrutiny and criticism.

Table 5.
Findings for the GMM-
PVAR model 2

Variables	GMI _(t)	KOF _(t)	Polyarchy _(t)
GMI _(t-1)	0.714***	−0.016	0.063
KOF _(t-1)	−0.170***	0.904***	0.070
Polyarchy _(t-1)	0.030	0.021	0.795***

Note(s): *** depicts significance at 1% level
Source(s): Authors' estimations

Table 6.
Findings for the GMM-
PVAR model 3

Variables	Milex _(t)	KOF _(t)	LibDem _(t)
Milex _(t-1)	0.645***	−0.347***	0.000
KOF _(t-1)	−0.006	0.910***	0.000
LibDem _(t-1)	−0.363	2.465	0.812***

Note(s): *** depicts significance at 1% level
Source(s): Authors' estimations

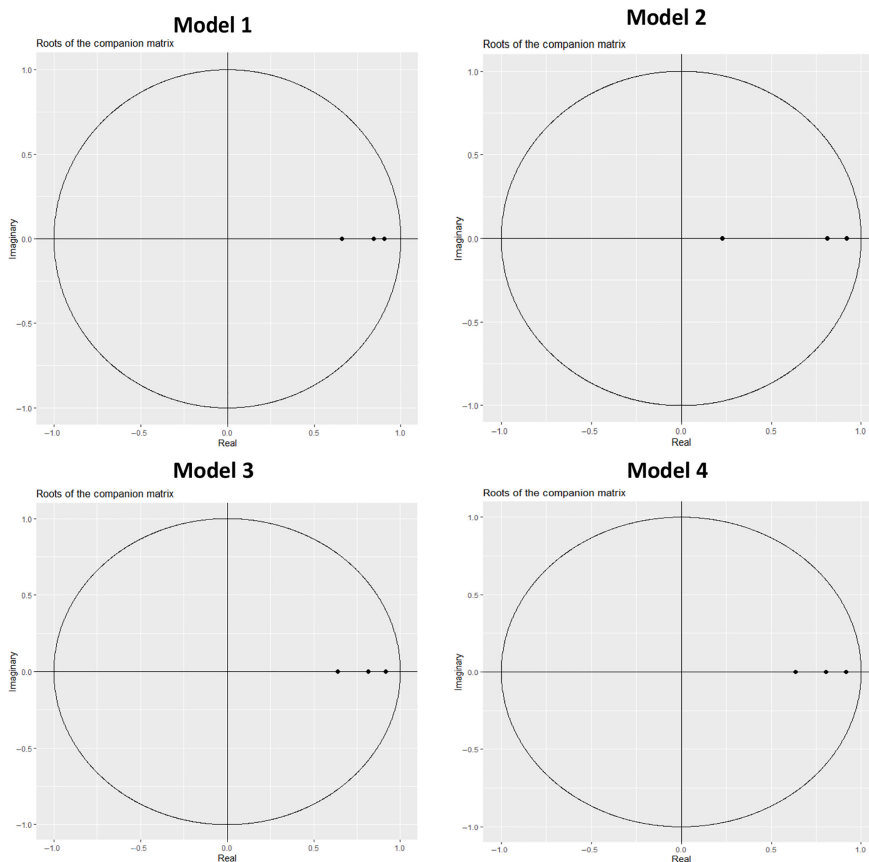
Table 7.
Findings for the GMM-
PVAR model 4

Variables	Milex _(t)	KOF _(t)	Polyarchy _(t)
Milex _(t-1)	0.645***	−0.341***	0.000
KOF _(t-1)	−0.007	0.909***	0.000
Polyarchy _(t-1)	−0.355	1.699	0.800***

Note(s): *** depicts significance at 1% level
Source(s): Authors' estimations

In our findings, there is also a negative and statistically significant association between globalization and the defense burden, as indicated in [Tables 6 and 7](#). The defense burden, measured by military spending as a share of GDP (Milex), was introduced as an alternative to the composite GMI to test the robustness and consistency of the results. In contrast to the KOF-GMI relationship ([Tables 4 and 5](#)), the estimations reveal a reverse association in the case of the KOF-Milex pairing ([Tables 6 and 7](#)). The findings show that higher defense burden is associated with weaker integration into the process of globalization. Although a reverse ordering of the nexus between the two indices, GMI and Milex, which quantify resources allocated to the military, and globalization (KOF) is observed, it does not impact the broader inference that emerges: the presence of a negative association between militarization and globalization. The two variables, GMI and Milex, used interchangeably in the estimations to capture militarization appear to reveal different channels through which they are negatively associated. Overall, these findings support the thesis that increased multilevel interdependence induced by globalization weakens the need for military preparedness, resulting in a reduced allocation of scarce resources to the military.

As a final step in the empirical analysis, the stability of the four models is confirmed in [Figure 1](#) since the dots (variables) fall inside the unit circle. Additionally, [Figures 2–5](#)



Source(s): Authors' estimations

Figure 1.
Stability tests

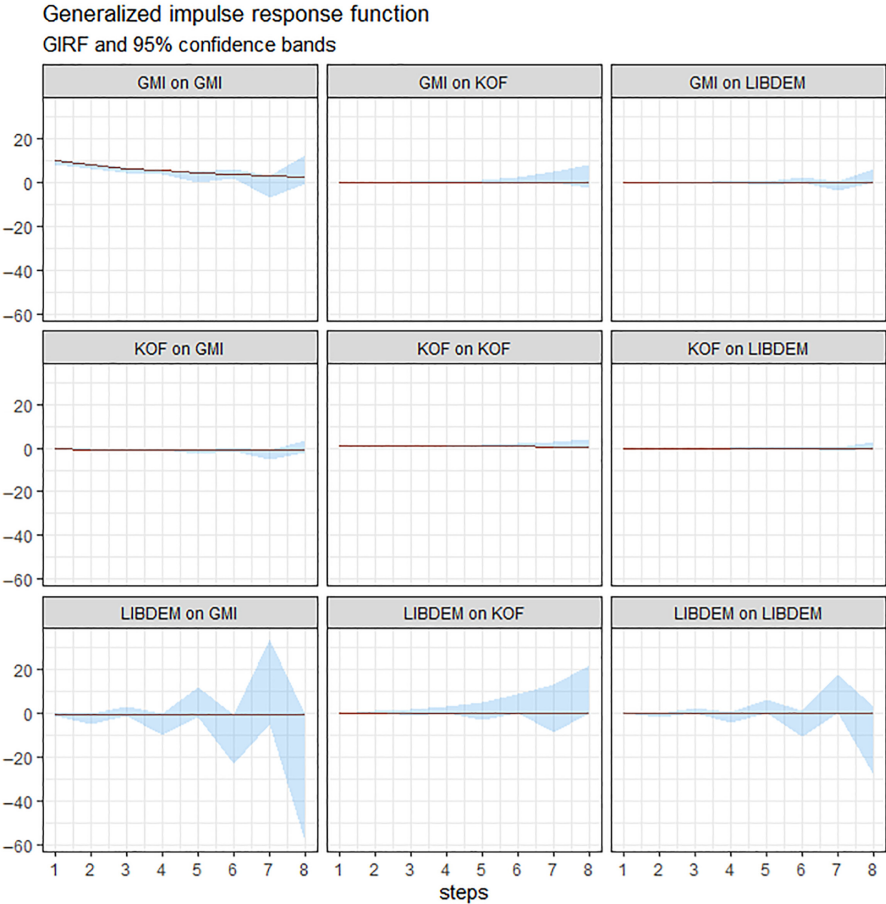


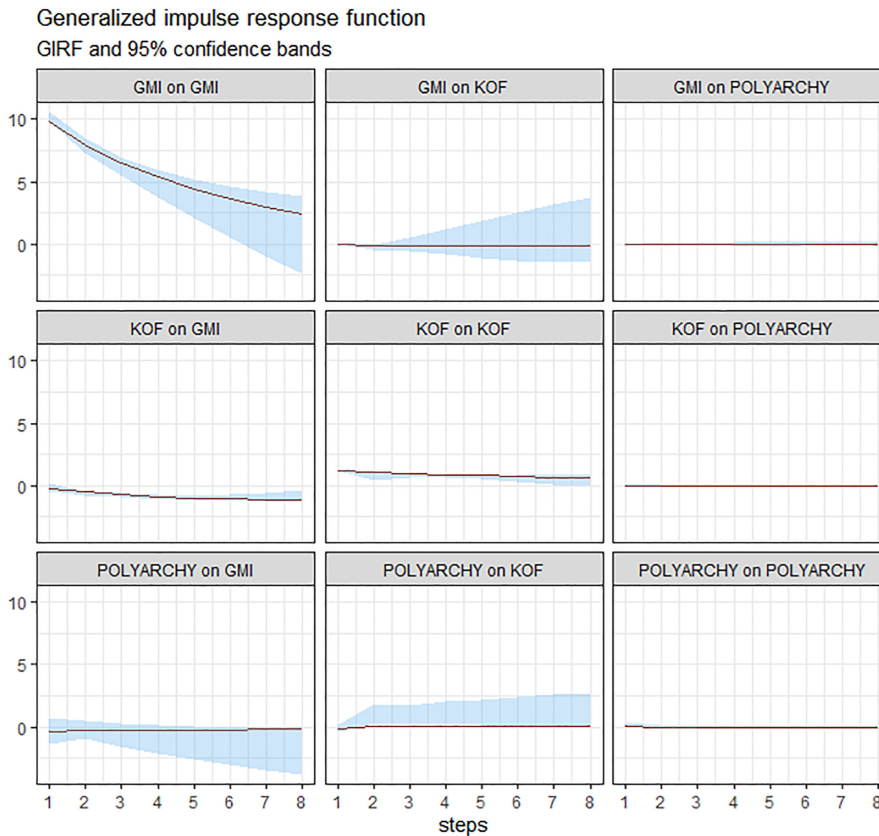
Figure 2.
GIRF for model 1

Source(s): Authors' estimations

illustrate the generalized impulse response functions (GIRF) with 5% error bands. The GIRFs presented show the causal associations between the variables used in the estimation of each model. Furthermore, they depict the reaction of one variable if there is a shock from another variable. This shock has a short-run force, eight- quarters, while the confidence bands are shown by the shaded space. Regarding model 1, it can be observed that a shock in the GMI variable causes a stable reaction by the aggregate KOF index of globalization. In model 2, a shock in KOF leads to a decrease in GMI, albeit this shock is comparatively smaller but nonetheless fairly persistent. In model 3, a shock in *Milex* produces a negative response on KOF which is long-lived, and this is also the case in model 4.

Conclusion and policy recommendations

Using composite indices, the paper examined empirically the presence of a nexus between globalization, militarization and liberal democracy. The democratic peace theory, the conflicting inhibiting effects of international trade and the democracy promoting globalization hypothesis formed the theoretical underpinnings of the empirical



Source(s): Authors' estimations

Figure 3.
GIRF for model 2

investigation. To this effect, a sample of 113 countries and data series spanning the period 1995–2019 were used. The results reported herein did not reveal any statistically traceable nexus between the two V-Dem democracy indices – *LibDem* and *polyarchy* used interchangeably in the estimations – and globalization or militarization. On the other hand, the findings indicated a negative and statistically significant association between the aggregate KOF globalization index and BICC's militarization index (GMI). A negative and significant nexus was also established between the defense burden (*MilEx*) – used as an alternative measure to the more nuanced GMI – and globalization. These two findings, viewed together, offer empirical support to the hypothesis that the strong links of interdependence shaped by globalization reduce the need for military preparedness, as this is captured by the two indices used herein. In a wider context, the results lead to a tentative inference in favor of the *doux commerce* thesis. Our study provides further empirical evidence that complements and extends the reported findings of the extant literature. As Gartzke and Lupu (2012) note, the issue of whether interdependence, as fostered and promoted by the multifaceted process of globalization, facilitates the resolution of differences between states via diplomatic channels rather than through confrontation and conflict, has implications in terms of the policies pursued in the international system. As the results of Mansury *et al.* (2023)

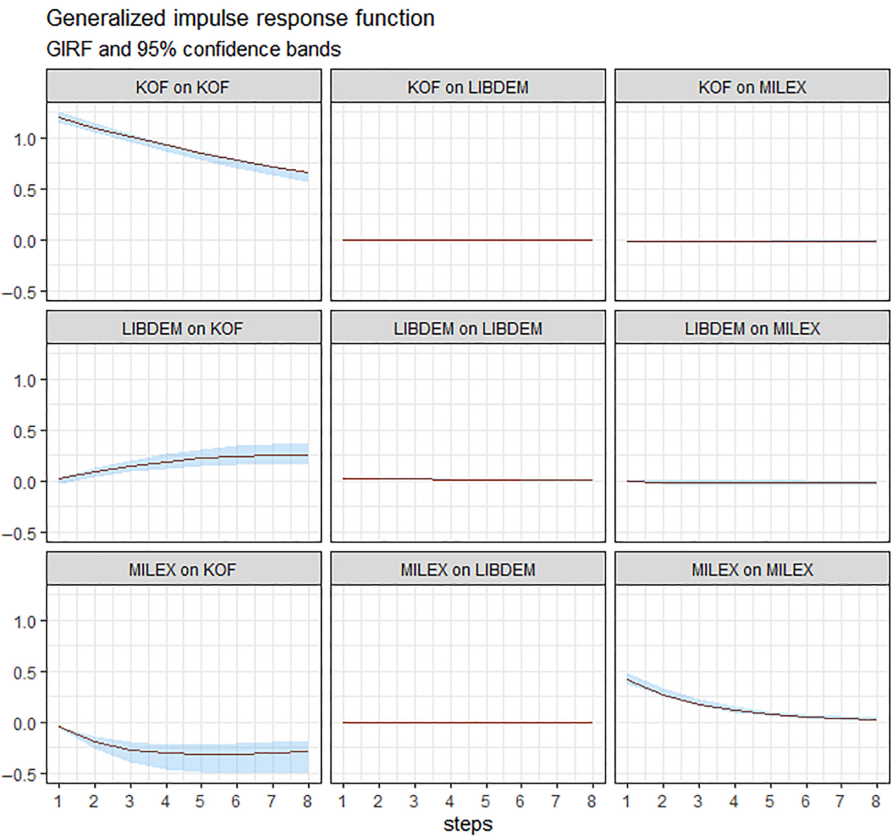


Figure 4.
GIRF for model 3

Source(s): Authors' estimations

indicate, trade has a pacifying effect. This renders support to the underpinning idea of the “*Wandel durch Handel*” policy mentioned in the introduction. Yet, recent developments in the form of the Russian invasion of Ukraine and the increasing tensions in a number of regions in the world such as the Taiwan straits, represent a challenge to the thesis reminiscent of the debate of whether the outbreak of World War I represented a failure of the economic interdependence hypothesis (*inter alia*: Rowe, 2005; Papayouanou, 1996; Gartzke and Lupu, 2012). Indeed, as Paganelli and Schumacher (2019) note, although the rise of international trade brings hopes of a more peaceful world, it also brings threats of a more belligerent world (p. 785). Although the international system has thus far at least progressed along a path of increasing globalization and interdependence, it still remains fractious.

Finally, regarding the results reported herein, a word of warning is in order. Given the data constraints, the period examined – essentially the entire post-bipolar era – has historically specific characteristics that affect the composite indices used in the estimations, and therefore, this spills into the results that they yield. Moreover, a further limitation of the present study may stem from the composite indices used to quantify militarization, globalization and liberal democracy. While these composite indices provide a useful summary, it is possible that they do not fully capture all the nuances and dynamics of the complex and multifaceted concepts they quantify and measure.

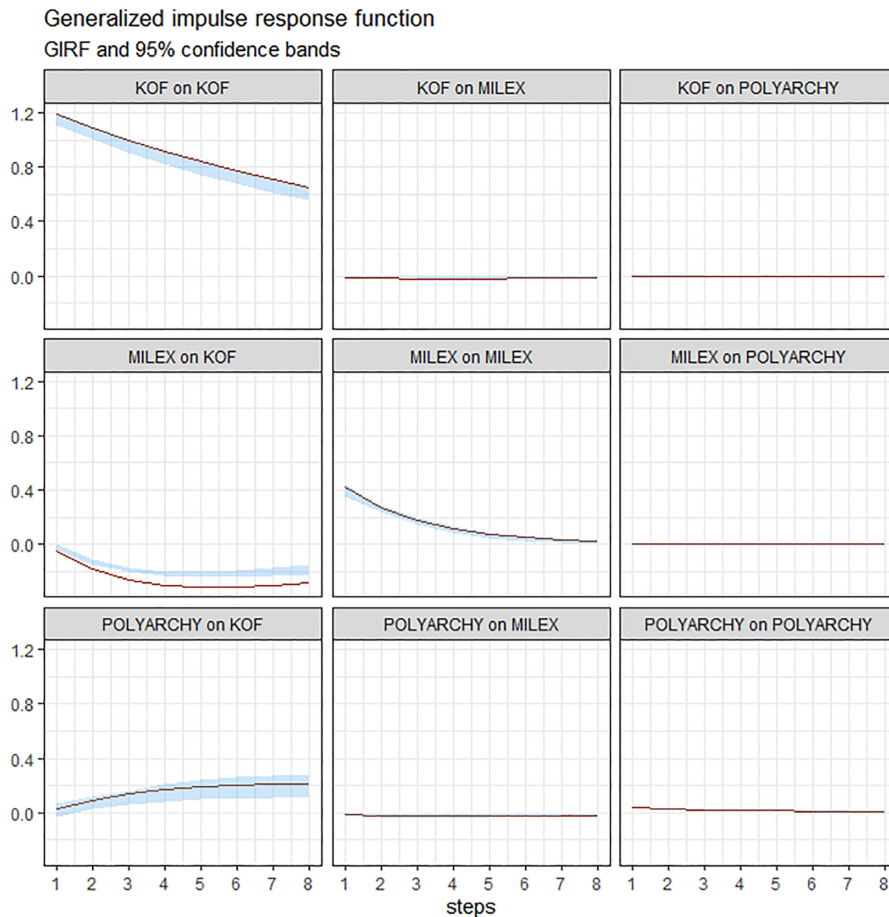


Figure 5.
GIRF for model 4

Notes

1. Change through trade. See for instance: <https://www.ifo.de/en/publications/2011/paper-academic-volume/wandel-durch-handel-globalisierung-und-institutioneller>
2. “End of an Era”, on February 27, 2022. <https://www.bundesregierung.de/breg-en/news/policy-statement-by-olaf-scholz-chancellor-of-the-federal-republic-of-germany-and-member-of-the-german-bundestag-27-february-2022-in-berlin-2008378>
3. In Book XX: *Of Laws in Relation to Commerce, Considered in its Nature and Distinctions*. Translated by Thomas Nugent, 1752. Batoche Books, 2001
4. <https://kof.ethz.ch/en/forecasts-and-indicators/indicators/kof-globalisation-index.html>
5. <https://v-dem.net/>
6. <https://www.bicc.de/publications/publicationpage/publication/global-militarisation-index-2021-1140/>
7. <https://www.bicc.de/about/about-us/>

8. <https://www.bicc.de/publications/publicationpage/publication/global-militarisation-index-2020-1024/>
9. A detailed presentation of the methodology used to estimate the GMI and the sources of the data used can be found here: <https://gmi.bicc.de/>
10. For a detailed presentation of the methodology used to construct the indices of the V-Dem project, see Coppedge *et al.* (2021).
11. They are: Albania, Algeria, Argentina, Armenia, Australia, Austria, Azerbaijan, Bangladesh, Belarus, Belgium, Bolivia, Botswana, Brazil, Bulgaria, Burkina Faso, Burundi, Cambodia, Cameroon, Canada, Chad, Chile, China, Colombia, Congo Democratic Republic, Costa Rica, Croatia, Cyprus, Czech Republic, Denmark, Dominican Republic, Ecuador, Egypt, El Salvador, Estonia, Fiji, Finland, France, Gambia, Germany, Ghana, Greece, Guatemala, Guinea-Bissau, Hungary, Iceland, India, Indonesia, Iran, Ireland, Israel, Italy, Jamaica, Japan, Jordan, Kazakhstan, Kenya, South Korea, Kyrgyz Republic, Latvia, Lebanon, Luxembourg, Madagascar, Malaysia, Mali, Malta, Mauritania, Mauritius, Mexico, Moldova, Mongolia, Morocco, Mozambique, Namibia, Nepal, Netherlands, New Zealand, Nigeria, Norway, Oman, Pakistan, Panama, Paraguay, Peru, Philippines, Poland, Portugal, Romania, Russia, Rwanda, Saudi Arabia, Senegal, Sierra Leone, Singapore, Slovak Republic, Slovenia, South Africa, Spain, Sri Lanka, Sweden, Switzerland, Tajikistan, Tanzania, Thailand, Tunisia, Turkey, Uganda, Ukraine, UK, USA, Uruguay, Zimbabwe, Niger and Lithuania
12. The military spending as a share of GDP series is drawn from SIPRI's military expenditure database (<https://www.sipri.org/>)
13. For a more detailed discussion on cross-panel techniques, see Chiu (2023) and Zaman (2023c).

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