

## Research Article

# The Resilience of the Multirelational Structure of Geopolitical Treaties is Critically Linked to Past Colonial World Order and Offshore Fiscal Havens

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The governance of the political and economic world order builds on a complex architecture of international treaties at various geographical scales. In a historical phase of high institutional turbulence, assessing the stability of such architecture with respect to the unilateral defection of single countries and the breakdown of single treaties is important. We carry out this analysis on the whole global architecture and find that the countries with the highest disruption potential are mostly medium-small and micro countries. Political stability is highly dependent on many former colonial overseas territories that are today part of the global network of fiscal havens, as well as on emerging economies, mostly from South-East Asia. Economic stability depends on medium-sized European and African countries. Single global treaties have surprisingly less disruptive potential, with the major exception of the WTO. Our results suggest that the potential fragility of the world order seems to be more directly related to global inequality and fiscal injustice than commonly believed and that the legacy of the colonial world order is still strong in the current international relations scenario. In particular, vested interests related to tax avoidance seem to have a structural role in the political architecture of global governance.

## 1. Introduction

The global architecture of flows of people, goods, services, and information is regulated by a governance system that works through a complex web of institutions and international treaties, most of which have been developed in the postwar period to promote an enabling environment [1] to exploit opportunities of various nature, such as, for instance, gains from trade, optimal division of labor, free circulation of people and resources, reduction of uncertainty from local economic fluctuations, and multilateral conflict prevention and resolution arrangements. Taken together, such agreements form a complex, multilayered system, often associated with the notion of a “world order” [2].

The system has been mostly tailored to the challenges and needs of a bipolar, cold war world which called for an overarching institutional setting to prevent the escalation of conflict and mitigate frictional obstacles to trade, movement, cultural exchange, and so on [3]. The system further developed in the apparently unipolar moment that followed the collapse of the former Soviet Union, but has been increasingly under pressure ever since [4], for the concurrence of several critical factors. The first has been the rapid emergence of a new multipolar world order [5] in which several powers are competing for global influence [6], including at least the USA, the EU, China, India, and Russia [7], and paving the way to alternative conceptions of the

world order itself [8], and to new variable geometries of influence [9, 10]. The second is the change of direction in US foreign policy which has gradually reduced the country's pivotal role in the political and financial maintenance of the global system to increasingly prioritize the internal affairs agenda [11]. The third is major threats such as the climate change emergency and the global pandemic crisis [12, 13], and previously the great credit crash of 2007–9 which severely tested the resilience of the multilateral architecture of the global order [14]. In a multipolar order, there is not necessarily an interest in guaranteeing the multilateral functioning of an institutionalized global governance system [15], and some powers could rather benefit from disrupting it at least in part to gain more influence in strategic regions, including the US themselves in the light of the new political agenda. Moreover, the global governance principles that worked in a 20<sup>th</sup>-century setting need not be as effective in a 21<sup>st</sup>-century one [16], as proven by its basic inability to provide timely and effective responses to the new challenges [17], whose scale and complexity are unprecedented and call for radically new solutions and extreme levels of global institutional coordination and cooperation [18].

An eloquent proof of the new logic of global governance that is emerging in the multipolar order is being provided by the Russian invasion of Ukraine, which has led to an increasing level of sanctioning and suspension of Russia from major treaties and organizations, mostly from Western countries. In this situation, the role and efficacy of global institutions in preventing the invasion or in promoting diplomatic solutions have proven to be limited and have led other countries which previously maintained a long-standing neutral position with respect to defense agreements such as NATO to seek admission, as is the case of Finland and Sweden. Therefore, major and unexpected changes to the structure of international agreements and treaties have become a very concrete scenario.

In this new context, the possibility of a sudden collapse of some of the institutions and treaties that shape the governance system is no longer mere theoretical speculation [19], and likewise, it is possible that even major global powers contemplate their partial or total withdrawal from certain institutions or treaties [20], as it has happened for the US under the Trump administration, with the withdrawal from UNESCO and UNHRC as a form of political retaliation [21] and the threat to leave the WHO, which was not ratified by the incoming Biden administration. Even the historical alliance between the US and major European countries, which is at the root of the very definition of the West as the geopolitical cornerstone of the whole system [22], cannot be taken for granted anymore in the new scenario [23, 24]. Populist governments all over the world build their political agenda on extreme parochialism and opportunistic, case-by-case adherence to international agreements, often as revenge for perceived politically or economically marginal positions [25]. On the contrary, the pandemic crisis de facto temporarily suspended certain treaties, such as the free intra-EU mobility ensured by the Schengen Treaty during anti-Covid-19 lockdowns, as well as many other

free circulation agreements, and such temporary suspensions could pave the way to larger and more stable institutional disruptions if normal functioning cannot be quickly restored.

It is important, therefore, to analyze the global governance system's robustness against this kind of shock. Not all institutions and treaties have the same structural role in global architecture, and the same holds for the participation of a given nation in one or more institutions and treaties. Which are the truly critical ones? According to the current state of knowledge, there is no clear answer to this question, despite its undeniable importance. In this paper, we provide a first, systematic analysis of the global governance system against one-sided disruptions, both in terms of treaty suspensions and of countries' unilateral withdrawals. This allows us to derive new risk indicators that may become very relevant in strategic and scenario analysis in the coming years.

In this increasingly uncertain environment, interpreting global changes in terms of linear processes of structural change is likely misleading. The tendency to interpret the evolution of the world order as a mere interplay between the goals and interests of the most influential countries and country blocks remains strong. However, a nonlinear science of networked international relations [26] is much more appropriate to deal with the complexity of international relations [27], especially so in response to major, unexpected shocks. We can conceptualize the world order as a multilevel network of alliances between countries, whose structural characteristics critically impinge upon its resilience. Inspired by biology, we propose a holistic approach to assess the resilience of the world order to the breakdown of geopolitical treaties due to unilateral moves by specific players. We call this approach system global policy, in analogy to systems biology [28], defined as the computational and mathematical modeling of complex geopolitical systems. Given the existing complex architecture of global relations, even minor changes in existing economic or political trade deals could, in principle, spark complex dynamic responses. One cannot rule out in principle that the collapse of relatively minor agreements or the withdrawal of second-tier countries from major agreements kicks off adjustment cascades whose consequences could be disruptive. We propose an innovative methodology based upon the structure of multilayer networks [29, 30] as a substrate for a nonlinear approach to the analysis of international relations, and we illustrate its potential by simulating the structural impact of simple shocks under the form of unilateral defections on the current world order architecture.

## 2. Results

*2.1. Overview of the Data.* We consider the full list of active (as of 2015) economic alliances, agreements and bilateral trades, and political alliances and agreements (see Table 1). The list of treaties has been extracted in March 2015. The source for the list of economic treaties has been the following two Wikipedia pages, as of March 15, 2015: list of multilateral free-trade agreements and list of bilateral free-trade

agreements. WTO bilateral trade agreements have been extracted by the WTO database directly. For political treaties, the source has been the Wikipedia page (as of March 15, 2015): intergovernmental organizations established by treaty. The database with all the memberships for each treaty has been manually built from direct consultations of each treaty. The data set consists of 200 countries, with 4,733 deals in the political layer and 14,890 in the economic layer. Only 313 political interactions are not reflected in the economic layer. The resulting multilayer network is abstracted as two layers, political and economic, whose nodes represent countries and links represent deals in their respective layers (Figure 1).

*2.2. The Damage Index.* We test the world order's resilience by evaluating the global structural consequences of a unilateral defection of one or more countries from their economic or political deals. For this purpose, we first compute the community structure of the multilayer network [31]. Communities are detected as groups of countries whose deals are denser between them than with the rest of the countries outside their group. Several publicly available algorithms allow us to carry out such computations. We make use of [32] while being aware of the available alternatives. Although it is possible in principle that the choice of the algorithm may influence community detection results to some extent, this is not the main concern here. The purpose of our paper is not that of offering a fine-grained classification but rather to explore the general picture of the structural stability of the world order, so that marginal differences in the results would not alter our analysis and conclusions substantially. Next, we simulate the disruption by eliminating a country and all its deals from one of the layers, and recompute the resulting mesoscale organization, including community structure and seeking for possible components disconnected from the system's core. From this information, we can define a damage index measuring the level of disintegration of the original communities, the emergence of new connected components, and the loss of nodes in the largest connected component.

The mathematical definition of the damage index is easy and intuitive. Let  $C^\ell$  be the original number of communities before any disruption, and  $C_i^\ell$  indicate the number of communities found after removing a country (or block)  $i$  from the layer  $\ell$ . We define the ratio  $c_i^\ell = C_i^\ell/C^\ell$ . Similarly, we define the indicators  $q_i^\ell$  and  $g_i^\ell$  as the number of connected components in the system, and the size of the largest connected component, respectively. The three indices, separately, provide complementary information about how a country (or block) removal alters the whole structure, the size of its core, and the number of disconnected clusters (note that there can be just one connected component but several communities). The damage index is defined by

$$\delta_i^\ell = \frac{c_i^\ell \times q_i^\ell}{g_i^\ell}, \quad (1)$$

and its normalized version as  $\tilde{\delta}_i^\ell = \delta_i^\ell/\max(\delta_i^\ell)$ . It is worth noting that the damage index is high when, after disruption, the number of communities increases (more segregated network) or/and the number of connected components increases (segregation and isolation), or when the largest component of the system decreases (disaggregation). Note that these variables are not independent but truly correlated.

Thus, the damage index is a graph structural descriptor of network disruption and can be used to assess the resilience of the structural connectivity of the whole system. We have conducted several experiments on the world-order network structure. We have computed the damage index in the economic layer (EDI) and the damage index in the political layer (PDI) for all possible individual disruptions, i.e., by removing a single country and its deals from one specific layer. We can therefore assess their impact on the whole world order structure. The damage index lies between 0 and 1, reaching the unit value for the most disruptive countries. The results of our analysis are depicted in Figure 2. We have made use of distorted maps [33] to show the effect of every country's defection from economic or political deals upon the rest of the world. The distortion is computed for the damage index, and the color indicates its value for every country.

It is important to stress that the purpose of the damage index is not that of making predictions on the future dynamics of the world order or to understand what the coalition (e.g., Shapley) value of a given country is in the current architecture of the world order and its implications in terms of bargaining power, etc. These are very important issues that require specific approaches and deserve to be pursued further. Here, we are essentially interested in highlighting how the structural organization of the world order is vulnerable with respect to a specific kind of threat --unilateral defections of countries or the elimination of a single treaty from the global architecture. A better understanding of the effects of these perturbations may give us insights into the implicit forces that have shaped such architecture the way it is, not as a result of a top-down design but under the concurrent action of many different factors, opportunities, and events. On the contrary, considering this specific kind of threat has not only a purely theoretical value in a scenario in which the existing institutional setting is increasingly under pressure so that adherence of countries cannot be taken for granted any longer. If the structural stability of the world order architecture becomes problematic, understanding what could be the effect of unilateral deviations becomes important, not to make predictions (clearly, a unilateral defection by an important country would spark a train of chain reactions that could be very difficult to anticipate), but to find out where future policy redesign efforts should be directed to improve its resilience.

*2.3. Independence of the Damage Index.* To disentangle the complementarity of our structural descriptor, the damage index, compared to other indices, we have selected the fragile states index (FSI), which is a measure of a state's internal sources of institutional, political, and socio-economic

TABLE 1: List of the geopolitical treaties considered in this study.

Names	Descriptions
AU	African Union
ACTO	Amazon Cooperation Treaty Organization
ABCA	American-British-Canadian-Australian-New Zealand Armies
AC	Andean Community
APA	Anglo-Portuguese Alliance
AL	Arab League
AMU	Arab Maghreb Union
AFTA	ASEAN Free Trade Area
APEC	Asia-Pacific Economic Cooperation
APTA	Asia-Pacific Trade Agreement
ACS	Association of Caribbean States
BRICS	Association of Emerging Economies
ASEAN	Association of Southeast Asian Nations
ANZCERTA	Australia-New Zealand Closer economic agreement
ANZUS	Australia-New Zealand-United States security treaty
BA	Baltic assembly
BNS	Baltic naval squadron
BIMSTEC	Bay of Bengal Initiative for Multisectoral Technical and Economic Cooperation
BENELUX	Benelux Union
BSEC	Black Sea Economic Cooperation
ALBA	Bolivarian Alliance for the Peoples of our America
CARICOM	Caribbean Community
SICA	Central American Integration system
CEFTA	Central European Free Trade Agreement
CSTO	Collective Security Treaty Organization
CEZ	Common Economic Zone
COMESA	Common Market for Eastern and Southern Africa
CIS	Commonwealth of Independent States
CISFTA	Commonwealth of Independent States Free Trade Area
CON	Commonwealth of Nations
CELAC	Community of Latin American and Caribbean States
CENSAD	Community of Sahel-Saharan States
CCTS	Cooperation Council of Turkic-speaking states
CAFTADR	Dominican Republic-Central America FTA
EAC	East African Community
CEMAC	Economic and Monetary Community of Central Africa
ECCAS	Economic Community of Central African states
ECGLC	Economic Community of the Great Lakes Countries
ECOWAS	Economic Community of West African states
ECO	Economic Cooperation Organization
EAEU	Eurasian Economic Union
EMFTA	Euro-Mediterranean Free Trade Area
EEA	European Economic Area
EFTA	European Free Trade Association
EU	European Union
FVEY	Five Eyes/UKUSA
FPDA	Five Power Defense Arrangements
SSEUR	Fourteen Eyes
GSTP	Global System of Trade Preferences among developing countries
GAFTA	Greater Arab Free Trade Area/PAFTA
GCC	Gulf Cooperation Council
IOC	Indian Ocean Commission
RIOPACT	Inter-American Treaty of Reciprocal Assistance
IAD	Intergovernmental Authority on Development
LHT	Lancaster House Treaties
LAES	Latin American Economic System
LAIA	Latin American Integration Association
MRU	Mano River Union
MGC	Mekong-Ganga Cooperation
MSG	Melanesian Spearhead Group

TABLE 1: Continued.

Names	Descriptions
EUROZONE	Monetary Union of EU
MATF	Moroccan-American Treaty of Friendship
NC	Nordic Council
NAFTA	North American Free Trade Agreement
NATO	North Atlantic Treaty Organization
OECS	Organization of Eastern Caribbean States
GUAM	Organization for Democracy and Economic Development
OAS	Organization of American States
TAKM	Organization of the Eurasian Law Enforcement Agencies with Military Status
OPEC	Organization of the Petroleum Exporting Countries
PA	Pacific Alliance
PICTA	Pacific Island Countries Trade Agreement
PIF	Pacific Islands Forum
PATCRA	Papua New Guinea-Australia Trade and Commercial Relations Agreement
PSF	Peninsula Shield Force
PTN	Protocol on Trade Negotiations
SCO	Shanghai Cooperation Organization
SAARC	South Asian Association for Regional Cooperation/SAPTA
SAFTA	South Asian Free Trade Area
ZPCAS	South Atlantic Peace and Cooperation Zone
SKUSA	South Korea-United States Alliance
SACU	Southern African Customs Union
SADC	Southern African Development Community
MERCOSUR	Southern Common Market
SICOFAA	System of Cooperation among the American Air Forces
TPSEP	Trans-Pacific Strategic Economic Partnership
TMCS	Treaty of Mutual Cooperation and Security
USMEFTA1	U.S-Middle East Free Trade Area
USMEFTA2	U.S-Middle East Free Trade Area
USMEFTA3	U.S-Middle East Free Trade Area
USMEFTA4	U.S-Middle East Free Trade Area
USMEFTA5	U.S-Middle East Free Trade Area
UFM	Union for the Mediterranean
UNASUR	Union of South American Nations
USRB	Union State of Russia and Belarus
UPMDT	USA-Philippines Mutual Defense Treaty
V4	Visegrad Four
UEMOA	West African Economic and Monetary union
WAMZ	West African Monetary Zone
WTO	World Trade Organization

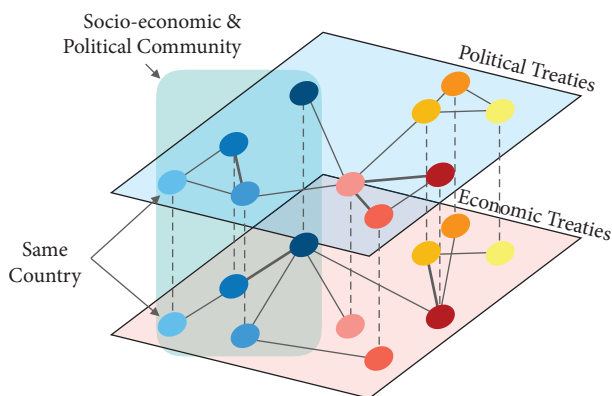


FIGURE 1: Multilayer network representation of socio-economic and political treaties. Nodes represent countries and edges represent existing interactions between different relationships, such as political and economic ones, which are mapped to different layers.

criticalities [34]. A statistical analysis based on Spearman correlation reveals that there is no direct correlation between FSI and the two defined economic (DIE;  $r = -0.10$ ,  $p$  value = 0.18) and political damage (DIP,  $r = 0.05$ ,  $p$  value = 0.53) indices, respectively. This result has important implications: it shows that intrinsically dysfunctional states need not be the most disruptive from a global perspective, as their turbulence may be inherently local, whereas we consider the global impacts of a perturbation of the world order. It also implies that the world order is not critically susceptible to the factors that typically cause states to fail, e.g., localized corruption and low levels of human and socio-economic development.

**2.4. Geopolitical Assessment.** The second important result is that the USA, as well as other major Western countries, are not disruptive, and the reason is that since Western

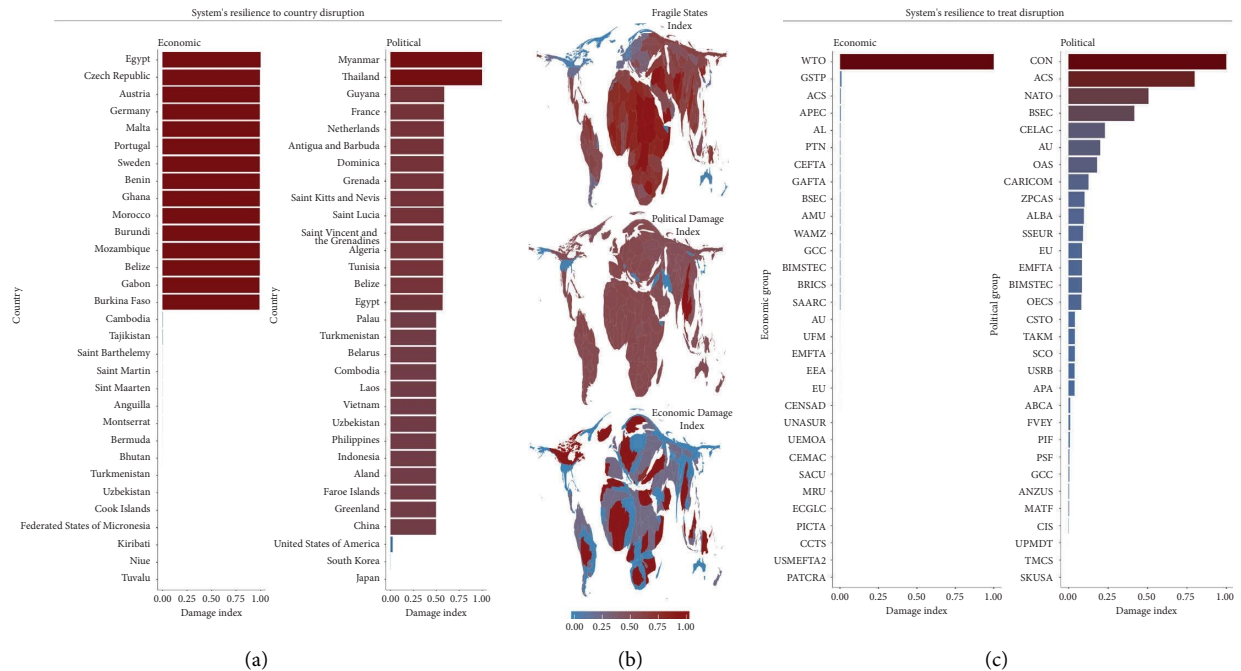


FIGURE 2: Cartography of world order resilience. The central panel shows the distorted maps of the fragile states index (FSI, top) vs. the political damage index (PDI, middle) and economic damage index (EDI, bottom), as defined in the text. Cartograms are built according to Gastner and Newman (33). In the left and right panels, we show the values of the damage index with respect to economic and political relationships, separately, in response to country-based disruptions (left) and treat-based disruptions (right): values range from 0 to 1, and we refer to the text for further details.

countries tend to be tightly knit in their participation in international political or economic deals, the unilateral defection of a single country does not cause major structural damage as there is a significant level of redundancy. But the most surprising result comes from comparing PDI and EDI. In the political layer, the most critical countries are Myanmar and Thailand, even if there is a second group of countries that includes former colonial powers such as France and the Netherlands, and somewhat surprisingly, a number of tiny countries that are in most cases overseas territories, plus a few Northern African countries with important ties to Europe such as Algeria, Tunisia, and Egypt, and a third group which includes, among others, China and more South-East Asian countries. Here, we are not referring to “groups” as derived from a specific cluster analysis, but simply as the set of countries that share a common value of the damage index. It clearly looks paradoxical that a small island state such as, say, Saint Kitts and Nevis may have a (slightly) larger disruptive political potential than China. Moreover, the US damage index is extremely small. Overall, however, the size of the biggest disruption effects in the political layer is much smaller than in the economic one, although there is a large number of countries that are potentially critical. In the economic layer, instead, there are much fewer countries that are potentially critical, but the size of the associated disruptive effects is bigger than the political ones. Moreover, the critical countries include a G7 member such as Germany, and also a number of smaller

EU countries, African countries, and Belize, which was also in the second group of politically disruptive countries; the same is true for Egypt, which is the only other country which is critical for both layers, and whose importance might be linked to its crucial mediation role in one of the most long-seeded, globally critical conflicts, the Israeli-Palestinian one [35]. Large disruption is, therefore, more likely to come from the global economy than from global politics. The politically most critical regions are South-East Asia, North Africa, and Caribbean overseas territories, whereas the economically critical regions are Europe and Asia. Belize is a notable, common exception.

Such striking differences between the EDI and the PDI may possibly reflect “grammatical” differences between the two networks, for instance in terms of degree distributions. But it would be misleading to think that such structural properties in themselves explain the differences. The political and the economic treaties considered do not present, in principle, any obvious structural feature that should differentiate them in terms of how many countries are involved in each and how membership in the various treaties is intertwined. Therefore, even if such structural differences emerged to some extent, it would be difficult to interpret them as an intrinsic structural property. It is more meaningful to interpret such differences in terms of the “semantics” of the networks, i.e., of the different roles that political and economic agreements have in tying up the global architecture of the world order. In the discussion, we further elaborate on this point.

### 3. Discussion

*3.1. Country Disruption Potential.* Many African countries are found to have major economically disruptive potential: Egypt, Benin, Ghana, Morocco, Burundi, Mozambique, Gabon, and Burkina Faso. The only G7 country with high economic disruption potential is Germany, accompanied by medium (Czech Republic, Austria, Portugal, and Sweden) and small (Malta) European countries. Finally, there is Belize. This is a surprising result, as most such countries are small or very small economies. The massive presence of African countries in this list seems to suggest that the economic world order still largely reflects the colonialist world order, a result that agrees with previous analyses carried out with different methodologies on different kinds of data [36–38]. On the contrary, there is also strong evidence that the German EU area of economic influence also plays a key role in the global architecture, as both Austria and the Czech Republic are economically disruptive. The presence of Portugal also hints at the ties with the colonial world order, given the important past of the country as a colonial power. Finally, we have small former colonies such as Malta and Belize.

Even more interesting, though, is the country's disruption picture on the political side. Here, together with the already mentioned Myanmar and Thailand, we again find two past colonial powers such as France and the Netherlands. However, the most interesting feature of the list is the massive presence of micro-States, that is, colonial overseas territories that are currently well-recognized fiscal havens: Antigua, Dominica, Granada, Saint Lucia, Saint Kitts and Nevis, Saint Vincent. As recognized in the literature, micro-States with less than one million inhabitants have a comparatively large probability of being tax havens [39], and it is hard to think of other common features that might make them so salient for the stability of the political layer of the world order. There are in addition three North-African countries (Egypt again, Algeria and Tunisia), Guyana and again Belize (two more overseas tax havens), plus a heterogeneous group of countries with lower but still substantial levels of disruptive capacity. Overall, the political picture draws a significant overlap of remnants of the colonial world order and global networks of tax avoidance. It is remarkable that the disruptive potential of fiscal havens is political, rather than economical. These results present interesting relationships with recent research that reconstructs the global architecture of tax evasion [40, 41], suggesting that the political architecture of the world order could be still largely shaped by the primary capital accumulation of colonial empires [42], and the opaque system of tax havens which largely coincides with small territorial leftovers of previous, global territorial possessions [43], whose function was that of offshore sheltering of colonial riches during the uncertain decolonization process [44], and that have further consolidated their specialization ever since, also covering money laundering from illegal activities [45].

*3.2. Treaties Disruption Potential.* On the contrary, the disruption picture from the point of view of international

treaties is considerably simpler, to a surprising extent. The only treaty which has a major (and very substantial) disruptive capacity from the economic point of view is the free-trade agreement administered by the WTO, whose multilateral governance role is tellingly undergoing significant changes [46]. From a political point of view, the critical treaties are instead the Commonwealth of Nations, the Association of Caribbean States, NATO, and the Black Sea Economic Cooperation. The major role of the Commonwealth and of the Association of Caribbean States points attention again toward the colonial world order-tax evasion nexus. NATO has, for once, a rather intuitive role in the global architecture of political relations. The fact that the Black Sea Economic Cooperation has a major disruptive impact in political terms seems to stress the importance of the socio-economic stability of the Black Sea area which not incidentally has been at the center of major tensions between the E.U. and Russia in recent years.

*3.3. Continuing Legacy of the Colonial World Order.* The nonlinear structure of the global architecture of economic and political relations is surprisingly complex and yet at the same time informed by a familiar logic, and its critical conditions of robustness do not reflect conventional wisdom. Despite its preliminary character, our analysis highlights how the legacy of the colonial world order, as reflected in the current vast network of overseas tax havens, seems to play a much bigger role in the shaping of the current world order than it could be imagined, to the point of turning the principle of country sovereignty of such micro-states into a pillar of a global system of tax evasion [47]. The countries with the most disruptive potential are not, with few exceptions, major market democracies and institutional agents of democratic peace, but less developed countries (LDCs) whose role in the current world order is still largely determined by their colonial past and overseas territories whose main economic specialization is the custody of large shares of the world's financial assets whose property is undisclosed [43]. On the contrary, the disruptive potential of such countries is not merely related to corruption or a lack of socio-economic development; as we have seen, neither political nor economic disruption is correlated to the FSI. It depends on the structural role they play in the architecture of the global governance system, which, as we have seen, is still largely shaped by postcolonial logic. Interestingly, such logic also surfaces from the analysis of the disruptive potential of international treaties, with the additional driver of East-West relations as a legacy of the Cold War and Russia-NATO antagonism. These unexpected structural features of the world order might explain, among other things, the persistence of difficulties in dismantling the global network of tax evasion despite the ambitious commitments of major world powers [48, 49] and the tax havens' capacity to flexibly adapt to, and essentially neutralize, more restrictive measures to control tax evasion, such as automatic exchange of information between tax havens and high-tax countries [50]. Our results suggest that the structural weaknesses of the current world order could be due to causes that are different

from the ones generally considered. Specifically, they seem to be much more fundamentally related than commonly thought to the opaque mechanisms that ensure the perpetuation of global inequalities and postcolonial socio-economic divides. This result will be of vital importance in rethinking the world order after the COVID-19 crisis, as the pandemic has further and dramatically widened preexisting income gaps both at national and global scales so that a massive redistribution could be necessary to guarantee some minimal form of social justice [51]. So far, the incumbent global order has mostly adapted to the changing circumstances through tactical adjustment rather than major restructuring [9]. But the policy agenda of the postpandemic world might have to address fiscal injustice and its overlooked disruptive potential [52] much more explicitly while being called to move beyond the colonial world order, and its still looming legacy, for good.

#### 4. Materials and Methods

A preprint has previously been published [53].

#### Data Availability

The data that support the findings of this study are available from public repositories, without restrictions.

#### Additional Points

The code used that support the findings of this study is available from the corresponding author upon reasonable request.

#### Disclosure

A preprint of a previous version of this paper has been published on arXiv: <https://arxiv.org/abs/2203.00618>.

#### Conflicts of Interest

The authors declare that they have no conflicts of interest.

#### Authors' Contributions

P.S. and M.D. performed the data analysis. All the authors designed the research and wrote the manuscript.

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#### References

- [1] A. McGrew and D. Held, *Governing Globalization: Power, Authority and Global Governance*, Polity Press, Cambridge, UK, 2002.
- [2] H. Kissinger, *World Order*, Penguin press, London, UK, 2014.
- [3] B. Ashley Leeds and M. Mattes, "Alliance politics during the cold war: aberration, new world order, or continuation of history?" *Conflict Management and Peace Science*, vol. 24, no. 3, pp. 183–199, 2007.
- [4] C. W. Freeman, "On american diplomacy and the disorderly oscillation of world orders," *American Diplomacy*, pp. 1–5, 2021.
- [5] W. R. Mead, "The return of geopolitics: the revenge of the revisionist powers," *Foreign Affairs*, vol. 93, p. 69, 2014.
- [6] C. Duncombe and T. Dunne, "After liberal world order," *International Affairs*, vol. 94, no. 1, pp. 25–42, 2018.
- [7] M. Parizek and M. D. Stephen, "The representation of brics in global economic governance: reform and fragmentation of multilateral institutions," *BRICS and the Global Economy*, World Scientific Publishing, Singapore, 2017.
- [8] J. Agnew, "Emerging China and critical geopolitics: between world politics and Chinese particularity," *Eurasian Geography and Economics*, vol. 51, no. 5, pp. 569–582, 2010.
- [9] N. Bisley, "Contested asia's 'new' multilateralism and regional order," *The Pacific Review*, vol. 32, no. 2, pp. 221–231, 2019.
- [10] M. Kaczmarek, *Russia-China Relations in the post-crisis International Order*, Routledge, London, UK, 2015.
- [11] S. M. Patrick, "Trump and world order: the return of self-help," *Foreign Affairs*, vol. 96, p. 52, 2017.
- [12] J. T. Roberts, "Multipolarity and the new world (dis) order: us hegemonic decline and the fragmentation of the global climate regime," *Global Environmental Change*, vol. 21, no. 3, pp. 776–784, 2011.
- [13] H. Aziz, "Covid-19 as a catalyst in the transition to a future of multipolar global cooperation," in *Consensus or Conflict?*, pp. 17–27, Springer, Singapore, 2021.
- [14] A. Samman, "Conjuring the spirit of multilateralism: histories of crisis management during the 'great credit crash,'" *Review of International Studies*, vol. 42, no. 2, pp. 227–246, 2016.
- [15] G. Litman, "Is g20-led multilateralism reaching its limits?" *Bertelsmann Stiftung*, 2017.
- [16] H. Dieter, "The g20 and the dilemma of asymmetric sovereignty: why multilateralism is failing in crisis prevention," in *Global Economic Cooperation*, pp. 43–65, Springer, New Delhi, India, 2016.
- [17] F. Cameron, "Eu-asia should defend multilateralism," *Asia Europe Journal*, vol. 18, no. 2, pp. 217–221, 2020.
- [18] D. Conversi, "The ultimate challenge: nationalism and climate change," *Nationalities Papers*, vol. 48, no. 4, pp. 625–636, 2020.
- [19] A. B. Güven, "The world bank and emerging powers: beyond the multipolarity–multilateralism conundrum," *New Political Economy*, vol. 22, no. 5, pp. 496–520, 2017.
- [20] E. da Conceição-Heldt, "The clash of negotiations: the impact of outside options on multilateral trade negotiations," *International Negotiation*, vol. 18, no. 1, pp. 111–130, 2013.
- [21] M. A. Suleman, "The trump effect: international negotiation and dispute resolution," *Geo. Wash. Int'l L. Rev.*, vol. 51, p. 643, 2019.
- [22] M. Smith, "The eu, the us and the crisis of contemporary multilateralism," *Journal of European Integration*, vol. 40, no. 5, pp. 539–553, 2018.



- [23] G. J. Ikenberry, "The plot against american foreign policy: can the liberal order survive," *Foreign Affairs*, vol. 96, p. 2, 2017.
- [24] M. Riddervold and G. Rosén, "Unified in response to rising powers? China, Russia and eu-us relations," *Journal of European Integration*, vol. 40, no. 5, pp. 555–570, 2018.
- [25] A. Rodríguez-Pose, "The revenge of the places that don't matter (and what to do about it)," *Cambridge Journal of Regions, Economy and Society*, vol. 11, no. 1, pp. 189–209, 2018.
- [26] R. Jervis, *System Effects*, Princeton University Press, Princeton, NJ, USA, 1998.
- [27] K. J. Alter and K. Raustiala, "The rise of international regime complexity," *Annual Review of Law and Social Science*, vol. 14, no. 1, pp. 329–349, 2018.
- [28] H. Kitano, "Computational systems biology," *Nature*, vol. 420, no. 6912, pp. 206–210, 2002.
- [29] M. De Domenico, A. Sole-Ribalta, E. Cozzo et al., "Mathematical formulation of multilayer networks," *Physical Review X*, vol. 3, no. 4, Article ID 041022, 2013.
- [30] M. Kivelä, A. Arenas, M. Barthelemy, J. P. Gleeson, Y. Moreno, and M. A. Porter, "Multilayer networks," *Journal of complex networks*, vol. 2, no. 3, pp. 203–271, 2014.
- [31] M. De Domenico, A. Lancichinetti, A. Arenas, and M. Rosvall, "Identifying modular flows on multilayer networks reveals highly overlapping organization in interconnected systems," *Physical Review X*, vol. 5, no. 1, Article ID 011027, 2015.
- [32] S. Fortunato, "Community detection in graphs," *Physics Reports*, vol. 486, no. 3–5, pp. 75–174, 2010.
- [33] M. T. Gastner and M. E. J. Newman, "Diffusion-based method for producing density-equalizing maps," *Proceedings of the National Academy of Sciences*, vol. 101, no. 20, pp. 7499–7504, 2004.
- [34] T. Besley and T. Persson, "Fragile states and development policy," *Journal of the European Economic Association*, vol. 9, no. 3, pp. 371–398, 2011.
- [35] M. Schulz, "The security implications of the israeli–palestinian conflict," in *Routledge Handbook on Middle East Security*, pp. 80–95, Routledge, London, UK, 2019.
- [36] M. Buscema, P. L. Sacco, G. Ferilli, M. Breda, and E. Grossi, "Analyzing the semantics of point spaces through the topological weighted centroid and other mathematical quantities: the hidden geometry of the global economic order," *Computational Intelligence*, vol. 31, no. 3, pp. 532–567, 2015.
- [37] M. Buscema, G. Ferilli, and P. L. Sacco, "What kind of 'world order'? an artificial neural networks approach to intensive data mining," *Technological Forecasting and Social Change*, vol. 117, pp. 46–56, 2017.
- [38] C. Erspamer, F. Della Torre, G. Massini, G. Ferilli, P. L. Sacco, and P. M. Buscema, "Global world (dis-) order? analyzing the dynamic evolution of the micro-structure of multipolarism by means of an unsupervised neural network approach," *Technological Forecasting and Social Change*, vol. 175, Article ID 121351, 2022.
- [39] D. Dharmapala and J. R. Hines, "Which countries become tax havens?" *Journal of Public Economics*, vol. 93, no. 9–10, pp. 1058–1068, 2009.
- [40] G. Zucman, "Taxing across borders: tracking personal wealth and corporate profits," *The Journal of Economic Perspectives*, vol. 28, no. 4, pp. 121–148, 2014.
- [41] A. Alstadsæter, N. Johannesen, and G. Zucman, "Tax evasion and inequality," *The American Economic Review*, vol. 109, no. 6, pp. 2073–2103, 2019.
- [42] J. D. Sachs, *The Ages of Globalization*, Columbia University Press, Columbia, NY, USA, 2020.
- [43] D. Haberly and D. Wójcik, "Tax havens and the production of offshore fdi: an empirical analysis," *Journal of Economic Geography*, vol. 15, no. 1, pp. 75–101, 2015.
- [44] V. Ogle, "'funk money': the end of empires, the expansion of tax havens, and decolonization as an economic and financial event," *Past & Present*, vol. 249, no. 1, pp. 213–249, 2020.
- [45] M. P. Hampton and J. Christensen, "Offshore pariahs? small island economies, tax havens, and the re-configuration of global finance," *World Development*, vol. 30, no. 9, pp. 1657–1673, 2002.
- [46] E. Hannah, J. Scott, and R. Wilkinson, "The wto in buenos aires: the outcome and its significance for the future of the multilateral trading system," *The World Economy*, vol. 41, no. 10, pp. 2578–2598, 2018.
- [47] R. P. Palan, "An evolutionary approach to international political economy: the case of corporate tax avoidance," *Review of Evolutionary Political Economy*, vol. 1, no. 2, pp. 161–182, 2020.
- [48] N. Johannesen and G. Zucman, "The end of bank secrecy? an evaluation of the g20 tax haven crackdown," *American Economic Journal: Economic Policy*, vol. 6, no. 1, pp. 65–91, 2014.
- [49] K. A. Konrad and T. B. Stolper, "Coordination and the fight against tax havens," *Journal of International Economics*, vol. 103, pp. 96–107, 2016.
- [50] L. Menkhoff and J. Miethe, "Tax evasion in new disguise? examining tax havens' international bank deposits," *Journal of Public Economics*, vol. 176, pp. 53–78, 2019.
- [51] E. Saez and G. Zucman, *How to Get \$1 Trillion from 1000 Billionaires: Tax Their Gains Now*, University of California, Berkeley, CA, USA, 2021.
- [52] E. Saez and G. Zucman, *The Triumph of Injustice: How the Rich Dodge Taxes and How to Make Them Pay*, WW Norton & Company, New York, NY, USA, 2019.
- [53] P. L. Sacco, A. Arenas, and M. De Domenico, "The resilience of the multirelational structure of geopolitical treaties is critically linked to past colonial world order and offshore fiscal havens," 2022, <https://arxiv.org/abs/2203.00618> arXiv preprint arXiv:2203.00618.