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SOCIAL FRACTAL ENTANGLEMENT AND THE SPONTANEOUS DEMOCRACY

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Abstract
The aim of this work is to show that the emergence of a spontaneous democracy from any country of international society results from the social fractal entanglement that allows the self-stabilization of international society through self-organization.
Applying the "Power-traps Framework" and "Multiverse Pattern Similarity Methodology" to international society dynamics, the spontaneous authoritarian regime, flawed democracy and full democracy in a country stems from the emergence of a behavioral trend that depends on the capital rate dispersion of the country and on the comparative capital rate dispersion of the country within the international society. A sample of nine countries was considered in this work to demonstrate this affirmation.
This work shows that in the nine countries considered, the more the comparative capital rate dispersion of a country tends to -1, the more the country is becoming a concave social space where the emergence of an authoritarian regime or territorial fragmentation is inevitable. The more the comparative capital rate dispersion of a country tends to +1, the more the country is becoming a convex social space, where the emergence of a democratic regime and political stability are inevitable. The emergence of a spontaneous democracy occurs independently of the theoretical political framework claimed by the country.

Keywords: political regime, social fractal entanglement, theoretical political framework, authoritarian, flawed democracy, full democracy, self-stabilization, self-organization, spontaneous democracy, power-traps framework, multiverse pattern similarity methodology, behavioral trend, capital rate dispersion, comparative capital rate dispersion, concave social space and convex social space.

Introduction

According to Shekomba (2026), the "Power-traps Framework" stems from capital gap propagation across fields of international society over time. It was also shown that the expansion of the overall capital of one country across fields causes contraction of the overall capital of another country across fields over time in international society. The "Power-traps Framework" shows that the capital lost across fields by a country is earned by another country across fields. This dynamic reflects the existence of entanglement between countries across fields in international society.

Shekomba posits that the International Society can be viewed as whole, constructed by the entanglement of multiple fields and multiple countries (fields and scales), nested like strata of an onion.

A capital gap that occurs within any stratum (country or field) of international society propagates to all strata with varying magnitudes through self-replication across all strata, interlocking for self-organization and self-stabilization.

This is similar to a wave propagating in any medium with varying amplitudes, depending on the physical characteristics of the propagation medium and the initial amplitude of the wave, to flatten the disturbance.

This dynamic is described as a fractal propagation of the capital gap, self-replicating the capital imbalance in all strata of the international society over time owing to the entanglement of countries across all strata of the international society.

A social fractal entanglement describes a pattern of self-organization and self-stabilization across all strata because the overall capital expansion of a country across fields causes the contraction of other countries across fields of international society.

Therefore, the phenomenon of social fractal entanglement allows the synchronization of all strata (fields and scales) of international society for self-organization and self-stabilization.

The negative or positive capital gap at the subnational stratum propagates to the national stratum, and the negative or positive capital gap at the national stratum propagates to the international stratum.

The principle of social fractal entanglement is simple: all strata of a country expand or contract simultaneously according to the dynamic of the overall capital distribution across all strata of the international society for self-organization and self-stabilization of the international society as a whole.

From this perspective, the purpose of this work is to show that spontaneous democracy in any country stems from the expansion or contraction of the overall capital of a country with respect to other countries of international society. Spontaneous democracy does not depend on the theoretical framework claimed at the national level; it is dictated by the behavioral trend that emerges in the country depending on Bourdieu's social distance between social agents in each country. According to Shekomba (2026), the behavioral trend is inversely proportional to Bourdieu's social distance, implying that the more Bourdieu's social distance is increasing, the more the behavioral trend of conflict is declining, and the more Bourdieu's social distance is declining, the more the behavioral trend of conflict is increasing in a country.

As stated above, all strata of a country expand or contract simultaneously depending on the expansion or contraction of other countries of international society, so the contraction of the overall capital of a country across fields of international society supposes

a decline in Bourdieu's social distance between the population of the country and the emergence of the concave social space in the country. The expansion of the overall capital of a country across fields of international society implies an increase in Bourdieu's social distance between the population of the country and the emergence of the convex social space in the country.

According to Waltz (1979), international society is anarchic because there is no central, higher authority (such as a world government) above sovereign states to enforce rules or protect them; this fundamental absence of overarching power forces states into a self-help system where they must rely on their own capabilities for survival, leading to competition and the constant possibility of war, as there is "nothing to prevent them". Anarchy, for Waltz, is not necessarily chaos, but the ordering principle, which defines states as similar, autonomous units facing similar challenges, drives them to balance power for security.

Drawing from Kenneth Waltz's concept of anarchy as an ordering principle of the international society, it can be considered that the international society is a self-organized and self-stabilized system that stems from social fractal entanglement.

Therefore, the social fractal entanglement of countries across all strata of international society, which results in self-organization and self-stabilization of international society, leads to the conclusion that the process of self-organization and self-stabilization is self-repeating across all strata of international society and triggers the emergence of spontaneous democracy in each country. In this case, the more all strata of a country are contracting, the more the country is becoming a concave social space, and in the case that the more all strata of a country are expanding, the more the country is becoming a convex social space.

Following the above explanation, spontaneous democracy in this work is defined as the social space structure between a fully concave social space where the comparative capital rate dispersion takes value of -1 and a fully convex social space where the comparative capital rate dispersion takes a value of +1, which can emerge from any social space endowed with a territory at a time or all of the time. The fully concave social space corresponds to a social space where the extreme concentration of power by an individual emerges, and the fully convex social space corresponds to a social space where extreme fragmentation of power among individuals emerges.

In an essay by Lorenzo Battisti[1], a chronological link was established between the emergence of fascism[2] and the economic crisis in Europe during the 1920s. According to Mabileau (1960), fascism is considered the most extreme form of personalization[3] of power within a country under the theoretical framework of representative democracy[4].

For Albert Mabileau, fascism is individualism[5], a form of personalized power opposed to the institutionalization[6] of power.

According to O'Donnell (1994), the persistence of the economic crisis necessitates the emergence of a "savior of the nation".

Following the two above authors, a causal link can be deduced between the persistence of the economic crisis and the emergence of personalist power, such as that of Benito Mussolini in 1920s Italy.

In his essay, Lorenzo Battisti highlights the correlation between the need for a "savior of the nation" and the continued impoverishment of the Italian state by providing an excerpt from Benito Mussolini's speech to the Chamber of Deputies on June 21, 1921: "On the other hand, to save the state, a surgical operation is needed. Yesterday, Mr. Orano said that the State is like the giant Briareus, with a hundred arms. I believe that ninety-five must be amputated; that is to say, the State must be reduced to its purely legal and political expression. The State must give us a police force to protect gentlemen from scoundrels, a well-organized judicial system, an army prepared for any eventuality, and a foreign policy attentive to national needs." Everything else, and I do not exclude secondary education either, should be part of the individual's private activity. If we want to save the State, we must abolish the collectivist State, as bequeathed to us by the necessity of war, and return to the Manchester State[7].

In an online newspaper, legrandcontinent.eu[8], citing the 10 most shocking quotes from President Milei of Argentina, who identifies himself as a libertarian, the following phrase can be noted: "The State is a pedophile in a nursery with children chained up and covered in Vaseline."

Mussolini and Milei have one thing in common: they want both the death of State institutions, one through the extreme concentration of power by an individual another by the extreme fragmentation of power among individuals.

President Milei's statements about the role of the State in 2024 do not differ much from those of Mussolini in 1921. The similarity in the words of Presidents Milei and Mussolini, regarding the role of the State, drew attention to the causal link between the emergence of the behavioral trend of the hatred of State institutions, drastic cuts in state spending and the economic crisis within a State.

Any researcher would seek to understand what these two heads of state, who lived in two different eras and countries, had in

[1]https://www.academia.edu/36531864/Effets_économiques_du_fascisme

[2]Fascism is a far-right, authoritarian ultranationalist political ideology characterized by dictatorial power, forcible suppression of opposition, and strong regimentation of society and the economy. It emphasizes the importance of the nation or race above individual rights and often involves militarism, expansionism, and a cult of the leader. Taken from https://en.wikipedia.org/wiki/Fascism#:~:text=Fascism%20(/ˈfæ%CA%83,the%20traditional%20left–right%20spectrum.

[3]Personalization of power refers to the process where a leader concentrates power in their own hands, reducing the influence of other political actors and institutions. This often involves taking control of decision-making, appointments, and the security apparatus, sometimes at the expense of their own support coalition. This process can manifest in both democratic and autocratic contexts, but is particularly relevant in understanding the dynamics of authoritarian regimes. Taken from https://www.journals.uchicago.edu/doi/10.1086/706049

[4]Representative democracy is a system of government where citizens elect representatives to make decisions and laws on their behalf, rather than directly voting on every issue. This system allows for governance in larger, more complex societies where direct participation is impractical. It is often described as a system "of the people, by the people, for the people". Taken from https://en.wikipedia.org/wiki/Representative_democracy

[5]Individualism of power refers to the concept where individual agency and autonomy are prioritized, emphasizing the individual's capacity to shape their own life and influence their surroundings, often in contrast to the power of collective entities like the state or social groups. It highlights the importance of individual rights, freedoms, and self-reliance. Taken from https://www.straypartners.com/power-individualism

[6]Institutionalization of power refers to the process where power becomes embedded within formal structures and systems, rather than being solely dependent on individuals or their personal relationships. This means that institutions like governments, corporations, and even social norms gain the ability to shape behavior and exert influence through established rules, procedures, and hierarchies. Taken from https://www.atlantis-press.com/article/125936597.pdf.

[7]On June 21, 1921, Benito Mussolini delivered his maiden speech as a newly elected deputy to the Italian Chamber of Deputies, defining the nascent Fascist movement's agenda. He declared that Fascism was not merely a local phenomenon but a national force, emphasizing unity, discipline, and the state, while advocating for a strong, decisive, and anti-socialist, anti-liberal, and nationalist policies
Taken from https://bibliotecafascista.blogspot.com/2012/03/speech-delivered-in-chamber-june-21_1506.html

[8]https://legrandcontinent.eu/fr/2023/09/18/javier-milei-en-10-phrases-choc-le-paleolibertaire-qui-veut-prendre-largentine/

common to hate state institutions in a similar way.

Logically, the common element must be the economic crisis of their respective countries. In 1921, Italy experienced the same symptoms of economic crisis as Argentina did in 2023.

In 2023, Argentina faced a severe persistent crisis characterized by high inflation (over 200%)[9], a recession, and a balance of payment problems. In 1920, after the First World War, Italy faced high inflation, considerable public debt, and social unrest, including major labor conflict[10].

According to O'Donnell (1994), the persistence of the economic crisis inherited by authoritarian governments by democratic governments in the 1980s enabled the emergence of the political regime of "saviors of the nation" in Latin America. Guillermo O'Donnell's observation suggests that the similarity between Benito Mussolini's and Javier Milei's statements against the state institutions is related to the economic crisis. This economic crisis logically triggered the emergence of a self-proclaimed "savior of the nation" in Argentina in 2023, who, like Mussolini in 1921, established a simplistic inverse linear correlation where the increase in a country's public expenditure corresponded to increasing poverty. This inverse linear correlation equation established by Mussolini and Milei between public expenditure and country poverty has no scientific evidence that can support it. This work will show how this linearity between an increase in public expenditure and country impoverishment is biased with respect to the social fractal entanglement between countries of international society.

The established parallel between the emergence of Mussolini's fascist regime in 1920, opposed to institutionalization (Mabileau, 1960), and the President Milei libertarian regime in Argentina, a country under the theoretical framework of representative democracy in 2023, suggests that, the two countries share a common thread: not the theoretical political framework adopted by their countries, but rather the contraction of their overall capital across fields with respect to other countries of the international society at a given period of time.

The similar views of Mussolini in 1921 and Milei in 2023 regarding the behavioral trend of the hatred of State institutions led to an investigation into the relationship between the emergence of a behavioral trend that generated a spontaneous democracy within a country and the expansion or contraction of its overall capital across fields of international society.

To conduct this investigation a paradigmatic change in the framework and methodology is needed to look at the old phenomenon from a new perspective.

This work uses the "Power-traps Framework", a complexity-based framework, and the "Multiverse Pattern Similarity Methodology", which establish a chronological bijective relationship between quantitative behavioral trends emerging from capital gaps and qualitative behavioral trends emerging from political discourses and political policies implemented across countries of international society.

In this work, a set of nine countries of international society was considered for the establishment of a bijective relationship between calculated values of the comparative capital rate dispersion from data estimates by the World Bank and the level of democracy estimates by the Economist Intelligence Unit (EIU) between 2007 and 2023.

The comparative capital rate dispersion is a quantitative variable that was defined as a proxy for the estimation of the magnitude of the overall capital of a country across fields with respect to other countries of international society.

The level of democracy is a qualitative variable that depends on five independent variables estimated by the EIU on a yearly basis. The set of nine countries considered is composed of the following:

- Norway (NOR)
- France (FRA)
- USA (U.S.)
- Italy (ITA)
- Argentina (ARG)
- Brazil (BRA)
- Burkina Faso (BKF)
- Mali (MAL)
- Democratic Republic of the Congo (DRC)

The selection of the constituents of the set of selected countries is based on the fact that, according to the EIU index (2023), Norway is characterized as a full democracy[11]; France, the United States, Italy, Argentina and Brazil are characterized as flawed democracies[12]; and Burkina Faso, Mali, and the Democratic Republic of the Congo are characterized as authoritarian[13].

Theoretical Framework: Symbolic space, concave social space and convex social space

As described above, the "Power-traps Framework" is a recorder of pattern similarity that emerges across multiverse or strata (fields, scales and time). It was developed on the basis of Pierre Bourdieu's theory of social space, which establishes a causal relationship between social distance and power relations (Bourdieu, 1989).

This framework establishes a bijective relationship across fields between the capital gap (Bourdieu's social distance) and the behavioral trend (power relations) between social agents in a social space.

Drawing from Pierre Bourdieu's concept of symbolic capital, the concept of symbolic space was defined as the set of behavioral

[9]Du fascisme argentin au nazi-fascisme péroniste. Retour sur des controverses académiques, état des lieux et approches empiriques. Taken from https://journals.openedition.org/cdlm/17617?lang=fr

[10]https://fr.wikipedia.org/wiki/Histoire_économique_de_l%27Italie_sous_le_régime_fasciste

[11]According to the Economist Intelligence Unit (EIU), a "full democracy" is a nation with an overall score above 8.00 (out of 10) where civil liberties and fundamental political freedoms are respected, reinforced by a political culture conducive to democracy. These countries feature valid checks and balances, an independent judiciary, and free media, with minimal issues in democratic functioning. Taken from https://en.wikipedia.org/wiki/The_Economist_Democracy_Index

[12]According to the Economist Intelligence Unit (EIU), flawed democracies are countries where elections are fair and free and basic civil liberties are honored, but may have issues (e.g. media freedom infringement and minor suppression of political opposition and critics). Taken from https://en.wikipedia.org/wiki/The_Economist_Democracy_Index

[13] According to the Economist Intelligence Unit (EIU), authoritarian regimes are countries where political pluralism is nonexistent or severely limited. Taken from https://en.wikipedia.org/wiki/The_Economist_Democracy_Index

trends that emerge from any social space over time as a result of the overall capital gap between social agents across fields over time. Symbolic capital emerges from the symbolic space, which is the space of power relations according to Bourdieu (1989).

Symbolic capital is understood as the behavioral trend that emerges from any Bourdieu's social space because of overall capital monopoly owned by one social agent across fields over time.

The bijective relationship between the set of behavioral trends across fields and the set of sequences of observations or time generates social spacetime (fields, scales and times), which is a symbolic space that has two chronological structures:

- Close Chronological Structure (Fixed over fields-time or Stable)
- Open Chronological Structure (Dynamic over fields-time or Unstable)

The "Power-traps Framework" considers both chronological structures of the symbolic space in the recording, step by step, of the dynamics of power relations that emerge from any social space over time because of the capital distribution structure among social agents.

Mathematical construction of the symbolic space

As mentioned above, the symbolic space is a mathematical space formed by the bijective relation between the elements of a set of behavioral trend values that emerge from any social space depending on the capital gap between social agents and the elements of a set of sequences of observations called time. Each element of the symbolic space is a bijective relation between one emerging behavioral trend and one sequence of observations (time).

According to Shekomba (2026), the values of the behavioral trends emerging from any social space correspond to two values of power relations deduced from Hobbes (1651): war or instability, in the case where the capital gap is zero; and domination or stability, in the case where the capital gap is infinity between one social agent and the others.

The situation where the social distance is zero is attributed binary number 1, and the situation where the social distance is infinity is attributed binary number 0.

The situation where the behavioral trend tends to +1 indicates increasing instability, and the situation where the behavioral trend tends to 0 indicates increasing stability.

It is then assumed that each behavioral trend of the symbolic space belongs to the interval [0,1].

The symbolic space is used to measure and predict the level of stability or instability of a social space over time.

The variable called symbolic capital or collective behavioral trend emerging from a symbolic space is considered to take only one binary value of the interval for each observation: 0 when one social agent concentrates all the overall capital monopoly across all the fields of the social space, which triggers an emerging stable behavioral trend, this indicates maximum stability.

When there is equality of capital among two or more social agents in a social space, the symbolic space takes a binary value 1, which shows that there is a non-emerging stable behavioral trend, indicating maximum instability.

All the values between [0, 1] indicate the level of stability if they are tending to 0 and of instability if they are tending to 1.

As stated above in the symbolic space, time is not considered to be the time indicated by a clock but rather the sequence of observation of each emerging behavioral trend from a social space.

The time indicated by a clock is considered chronological.

In the symbolic space, a variable is not solely a phenomenon (behavioral trend) or a sequence of observations (time). A variable in the symbolic space is a composite variable composed of multiple bijective relationships between each emerging behavioral trend and each sequence of observations, thus making any symbolic space variable a composite variable (composed of multiple variables) or complex variable. Each variable is unique.

In a symbolic space, the random variation of variables in each observation is because the variables themselves are composed of interdependent sub variables that are not necessarily observable independently of the other sub variables. This characteristic allows the symbolic space that records the dynamics of the social space to be considered a complex system, combining linearity in the case of the emergence of the same behavioral trend regardless of the number of sequences of observations and nonlinearity in the case of the emergence of different behavior trends for different sequences of observations. The linearity and nonlinearity of a complex system are based on the sequence of observations. A linear complex system generates a deterministic outcome over fields-time, and it has a close chronological structure. A nonlinear complex system generates a probabilistic outcome over fieldstime and has an open chronological structure structure. Therefore, investigation of complex systems such as social space cannot be undertaken only through a statistical model based solely on linear correlation because any complex system combines both chronological structures over fieldstime.

Because the social space is a complex system composed of multiple fields and multiple scales, from which only two behavioral trends (stability or instability) emerge over fieldstime, a junction is made between the two structures of the social space and Einstein's cosmological space, which generates two chronological structures of any cosmological body.

According to Einstein (1916), the appearance of spacetime curvature around a cosmological dust cluster indicates the chronological birth of a cosmological body, and the disappearance of the curvature of spacetime around a cosmological dust cluster indicates the chronological death of a cosmological body. The binary value of 0 is associated with the birth of the cosmological body, and the binary value 1 is associated with the death of the cosmological body. Both Einstein's cosmological space and the symbolic space presented here are information systems that simplify the study of complex systems.

From Einstein's (1916) concept of curvature of cosmological spacetime, it can be deduced that the curvature of a social space occurs, when the structure that emerges from multiple sequences of observations of a social space does not change, the structure is invariant with respect to the number of sequences of observations (time). Therefore, a social space is curved around a social agent if the same binary number 0 emerges from the symbolic space regardless of the number of sequences of observations, which means that the monopoly of symbolic capital is conserved by one social agent over fields-time. Social space stability is achieved around the social agent over fields-time.

There is stability of the same emerging behavioral trend in the social space over fields-time. The probability of the conservation of the same behavioral trend is 1 regardless of the number of sequences of observations.

Therefore, a stable social space is a curved social space around a social agent. A curved social space has a close chronological structure (chronological invariance), a deterministic social space, and no dispersive social space. In the formalism of the "Power-traps Framework", there is a large capital gap between one social agent and other social agents of the social space.

Drawing from Einstein's (1916) concept of the curvature of cosmological spacetime, it can be deduced that a social space is not

curved around a social agent when the condition of the overall capital monopoly by a single social agent is not met over fields-time.

There is instability of the emerging behavioral trend over a sequence of observations. One emerging behavioral trend is fragmented into multiple emerging behavioral trends from the social space over fields-time. The probability of fragmentation of the behavioral trend tends toward 1 over fields-time. A social spacetime that is not curved has an open chronological structure and is unstable, probabilistic and dispersive. In the formalism of the "Power-traps Framework", this means that there is a zero-capital gap between two or more social agents of the social space.

From the above explanations, it was deduced that any social space oscillates between two chronological structures:

- Concave social space (close chronological structure, contracting), which is nondispersive social space.
- Convex social space (open chronological structure, expanding), which is a dispersive social space.

The concave social space retains social agents inward, and the convex social space expels social agents outward.

Generalizing from above, a mathematical symbolic space that serves as a recorder of the dynamics of any social space was constructed by considering that a social space is a complex system that complies with seven characteristics described below:

Characteristic 1: The indication of the dynamics of the constituents within a complex system is recorded through the emergence of a behavioral trend at a given time.

Characteristic 2: A complex system has a closed chronological structure if the emerging behavioral trend is always invariant.

Characteristic 3: A complex system has an open chronological structure if the emerging behavioral trend is not invariant all the time.

Characteristic 4: A complex system is stable if it has a close or near-close chronological structure. It is a structure with a low capital rate dispersion among constituents. The positions of the constituents do not change over time.

Characteristic 5: A complex system is unstable if it has an open chronological structure. It is a structure with high capital rate dispersion among constituents. The positions of the constituents change over time.

Characteristic 6: All the constituents of a complex system take the same chronological structure as the complex system over time.

Characteristic 7: The chronological structure of a complex system can evolve from a closed chronological structure to an open one, and vice versa.

All seven of these characteristics are considered one mathematical proposition, and in mathematics, a proposition is true if it is proven. Therefore, it must be proven that the above proposition of a complex system is true if it is applied to the case of the social space.

For the mathematical construction of the symbolic space, the direct reasoning method was used, which consists of assuming that a proposition P is true to demonstrate that the proposition Q related to P is also true and concludes that P is true.

For the verification of the seven characteristics of a complex system described above, a mathematical proposition was made, assigned the truth value "true," which is as follows:

For any complex system, any pair of elements On and On+1 belonging to a set O and any pair of elements Pn and Pn+1 belonging to a set P, there exists a pair of elements OnPn and On+1Pn+1 belonging to the space OP resulting from the bijective relation between the two sets O and P such that:

For any situation where $OnPn \neq On+1Pn+1$ (1) regardless of the sequence of observations, the OP has a closed chronological structure. The distance between the elements of the space OP is infinite over time, with no overlaps. Positions froze over time (solid and stable structure).

For any situation where $OnPn \neq On+1Pn+1$ and $OnPn = On+1Pn+1$ (2) alternate over a sequence of observations, the OP has an open chronological structure. The positions are not frozen over time, and there is a possibility of overlap.

The bijective relation between the two independent sets O and P creates a mathematical space called OP.

The OP is a complex space endowed with a bijective relation between multiple elements of O and P, where On is an element of the set O and Pn is the element of the set P.

The set O is considered the set of emerging behavioral trends, and P is considered the set of sequences of observations. The bijective relationship between each emerging behavioral trend and each sequence of observations generates a symbolic space that is a recorder framework where each emerging behavioral trend is assigned one sequence of observations.

From the above, it follows that the complex system has a close chronological structure or concave structure if the positions of the constituents are frozen over time. This means that the binary value of the symbolic capital recorded from the complex system does not change its value over time, as in the case of equation (1). In terms of chronological dynamics, this is mathematically expressed as: $\partial OP/\partial t=C$ (3), where C is a constant, $\partial C/\partial t=0$. C is considered in physics as the speed or variation rate of something over time. A complex system that meets condition (3) is considered a nondispersive complex system or a linear complex system where everything becomes deterministic, and the dynamics of the complex system are static or in uniform linear motion. It is a stable, nondispersive complex system over time

Within a complex system that meets condition (3), the variation in capital dispersion over fields-time among constituents is zero or has a near-zero capital rate dispersion among constituents.

It also follows from the above that a complex system has an open chronological structure or convex structure if the positions of its elements change over fields-time. This means that the binary value of the symbolic capital recorded from the complex system changes its value over fields-time, as in equation (2). In terms of chronological dynamics, this is mathematically expressed as: $\partial OP/\partial t=V$ (4), where V is a variable over time. In physics, this is described as a uniformly accelerated motion, which is not a movement in a straight line; rather, it is a nonlinear motion, $\partial V/\partial t\neq 0$, and $\partial V/\partial t=A$, where A is a constant or a linear variable. In physics, V is considered the variable speed over time, and A is considered an invariable speed over time. V is the dependent variable of A and time. For any nonlinear dynamic, the variables are composites. It is an unstable system that is open over fields-time

A complex system that meets condition (4) is considered a dispersive complex system or a nonlinear complex system where any outcome becomes probabilistic.

Within a complex system that meets condition (4), the variation in capital dispersion over time among constituents moves away from zero and has a high capital rate dispersion among constituents.

Therefore, the capital rate dispersion within any complex system indicates magnitude of curvature of a complex system.

The "Power-traps Framework" considers Bourdieu's social space as a complex system that can verify the mathematical proposition P.

Therefore, according to the "Power-traps Framework", spontaneous democracy in any country results from capital rate dispersion and comparative capital rate dispersion with respect to other countries in international society.

The capital rate dispersion indicates the magnitude of curvature of the social space of a country and the comparative capital rate dispersion indicates the direction of the curvature and level of the corresponding spontaneous democracy.

If the comparative capital rate dispersion is negative, the direction of the curvature is down or concave, if it is positive, the direction of curvature is up or convex.

To prove that proposition P is true, proposition Q states that the level of democracy is a function of the comparative capital rate dispersion among a set of nine selected countries of international society. The greater positive the comparative capital rate dispersion of a country is high in the selected set, the greater its level of democracy is.

The greater negative the comparative capital rate dispersion of a country is high in the selected set, the lower its level of democracy is.

The "Power-traps Framework" established the equation BT=1/BSD (5), where Bourdieu's social distance, in this case, is the capital rate dispersion of each country that results from overall capital expansion or contraction with respect to other countries of the set of nine selected countries of international society.

Materials and Methodology

Public Expenditure: Public expenditure is carried out by the State, social security, administrations, local authorities, and their dependent administrations and agencies.

It is classified into three main categories:

- Operating expenditures, intended to guarantee the proper functioning of public services (current personnel and maintenance costs, acquisition of supplies, etc.).
- Redistribution expenditures: economic benefits paid to households (for example, retirement pensions, family allowances, minimum social benefits, etc.), subsidies to businesses and households, etc.
- Investment expenditures, intended to renew or increase public productive capital (for example, expenditures on research and development, acquisition of armaments, construction of buildings and infrastructure, etc.).

Secondary source from the World Bank:
https://data.worldbank.org/indicator/NE.CON.GOVT.CD

Population Size

The population size of a given country is the number of people who usually reside there and is typically measured on January 1. The source is usually the most recent population census, which is an official study for counting the population.

Secondary source from the World Bank:
https://data.worldbank.org/indicator/SP.POP.TOTL

Gini Coefficient

The Gini coefficient measures the degree to which the distribution of income or consumption among individuals or households within an economy deviates from a perfectly equal distribution. A Gini coefficient of 0 represents perfect equality, whereas an index of 100 implies perfect inequality.

Secondary source from the World Bank:
https://data.worldbank.org/indicator/SI.POV.GINI

Capital Rate Dispersion (CRD)

The capital rate is quantitative data estimated via the following formula:

CRDi = PEi/(PSixGCi) (6), where PSi is the population size of i, GCi is the Gini coefficient of i, and PEi is the annual public expenditure of i expressed in US dollars per person. CRDi is a proxy for Bourdieu's social distance magnitude in a country. Average public expenditure per person in a year is divided by the level of inequality.

Therefore, the behavioral trend emerging from each country is estimated by the formula: BTi = 1/CDRi (7), where BTi is the behavioral trend emerging from a country. If CRDi tends to 0, BTi tends to ∞.

Comparative Capital Rate Dispersion (CCRD)

The comparative capital rate dispersion is quantitative data estimated via a formula that depends on the Average Capital Rate Dispersion (ACRD) of the selected set of countries of international society.

The average capital rate dispersion of the set of selected countries is estimated via the following formula:

$$\text{ACRD} = \sum_{i=2}^{n} CRDi/i \quad (8)$$

Where CRDi is the capital rate dispersion of country i. ACRD considers the social fractal entanglement of countries within the set considered.

Finally, the comparative capital rate dispersion is estimated via the following formula:

CCRDi= (CDRi-ACRD)/(CDRi+ACRD) (9), where CCRDi is the comparative capital rate dispersion of a country in a set of selected countries. CCRDi is the entangled Bourdieu's social distance of each country with respect to the central Bourdieu's social position.

The CCRD takes values between [-1,+1]; the greater the value of the CCRD of a country tends to be -1, the more the country has a concave social space, and the greater the value of the CCRD of a country tends to be +1, the more the country has a convex social space.

EIU Democracy Index

The Economist Intelligence Unit's (EIU) Democracy Index is an annual report that assesses the state of democracy in 165 countries and two territories. It ranks countries according to five categories: electoral process and pluralism, the functioning of government, political participation, political culture, and civil liberties. These scores classify them into four regime types: full democracies, flawed democracies, hybrid regimes, and authoritarian regimes.

The five categories estimated via EIU are follows:

- Electoral Process and Pluralism (EPP) in X/10
- Governance Functioning (GF) in X/10
- Political Participation (PP) in X/10
- Political Culture (PC) in X/10
- Civil Liberties (CL) in X/10

Secondary source from EIU:
https://www.eiu.com/n/

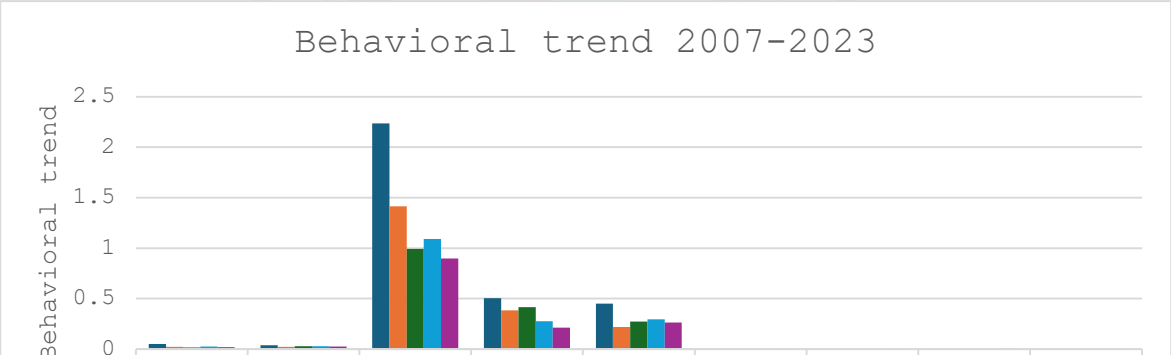
Multiverse Pattern Similarity Methodology.

It is labeled the "Multiverse Pattern Similarity Methodology" because it seeks a linear relationship between the behavioral (discursive), qualitative universe and the material (capital disparities), quantitative and measurable universe. These two universes are complex systems composed of multiple constituents, fields, and scales. Each field has multiple scales.

"Power-traps Framework" posits a cause-and-effect relationship between behavioral dynamics and the dynamics of capital disparities, across fields over time. This relationship is what is called a bijective relationship across field-time between the two universes. Thus, each capital disparity between social agents triggers a specific behavioral trend, and vice versa. This behavioral trend can be described as political ideology from which a spontaneous democracy emerges, but it stems from the structure of capital distribution among social agents within a social space. The two universes are linear if each calculated capital disparity corresponds to a specific emergent behavioral trend in the behavioral universe at a time. It is this similarity of patterns at a time that establishes a cause-and-effect relationship between the two universes.

The "Multiverse Patter Similarity Methodology "in this case seeks to establish multiverse pattern similarity between the level of democracy qualitatively estimated by the EIU and the comparative capital rate dispersion quantitatively estimated by using the "Power-traps Framework" on data estimated by the World Bank between 2007 and 2023.

Results and Interpretation



	ARG	BRA	DRC	BRK	MAL	NOR	FRA	ITA	USA
2007	0.04961	3.91E-0	2.2351	0.50407	0.45127	0.0017	3.48E-0	4.59E-0	5.63E-0
2011	0.02142	2.12E-0	1.41438	0.38424	0.21972	1.20E-0	3.20E-0	4.63E-0	5.12E-0
2015	1.69E-0	2.94E-0	0.9935	0.41605	0.27356	0.00159	3.75E-0	6.07E-0	5.13E-0
2019	0.02645	2.96E-0	1.09072	0.27424	0.29326	0.0015	3.35E-0	5.52E-0	4.59E-0
2023	1.82E-0	2.61E-0	0.89791	0.21212	0.2639	1.37E-0	3.08E-0	4.94E-0	3.78E-0

Figure 1: Behavioral trends 2007–2023
Source: Author's calculations based on estimates by the World Bank

The capital rate dispersion, taken without considering the entanglement of the nine countries selected in Figure 1, shows that there is a permanent behavioral trend of conflict in the Democratic Republic of the Congo, Burkina Faso, and Mali; all three of these countries are experiencing civil war, that is, territorial fragmentation.

Figure 1 shows an increasing behavioral trend of conflict in Argentina and Brazil and no behavioral trend of conflict in Norway, France, Italy and the United States.

A year – to - year analysis of the comparative capital rate dispersion considering that all nine countries of the set considered are entangled and the level of democracy estimated by the EIU will show how social fractal entanglement dictates spontaneous democracy in all nine countries of the selected set depending on the magnitude and the direction of curvature of the social space of each country.

The negative values on the tables of the comparative capital rate dispersion (CCRD) indicate a magnitude of the concave social space, and the positive values indicate the magnitude of the convex social space of each country of the selected set of nine countries of international society.

Table 1: Correlations between comparative capital rate dispersion and the EIU score in 2007

Country	Rank	Overall score EIU	EPP	GF	PP	PC	CL	CRD	CCRD	EIU 2007
ARG	56	6,63	8,75	5	5,56	5,63	8,24	20,15800425	-0,758450855	Flawed Democracy
BRA	41	7,38	9,58	7,86	4,44	5,63	9,41	2,56E+01	-0,703255071	Flawed Democracy
DRC	154	2,28	3	0,71	2,22	3,13	2,35	0,447407398	-0,993920906	Authoritarian
BKF	122	3,6	4	1,79	2,78	5	4,41	1,983866054	-0,973322923	Authoritarian
MAL	83	5,87	8,25	5	5,56	5,63	8,24	2,215974923	-0,986457039	Flawed Democracy
NOR	2	9,68	10	9,64	9,64	8,75	10	588,3990104	0,600765514	Full Democracy
FRA	24	8,07	9,58	7,5	6,67	7,5	9,12	2,88E+02	0,324530546	Full Democracy
ITA	29	7,98	9,58	6,43	6,67	8,13	9,12	2,18E+02	0,194991183	Full Democracy
U.S:	18	8,22	8,75	7,86	7,22	8,75	8,53	1,78E+02	0,09506025	Full Democracy

Source: Author's calculations based on estimates by the World Bank and the EIU

Table 1 shows that Argentina, Brazil, Burkina Faso, the Democratic Republic of the Congo and Mali have concave social spaces with different levels of magnitude and are characterized by the EIU as flawed democracies or authoritarian. It also shows that France, Italy, Norway and the United States have a convex social space with different magnitudes and are characterized by the EIU as full democracy.

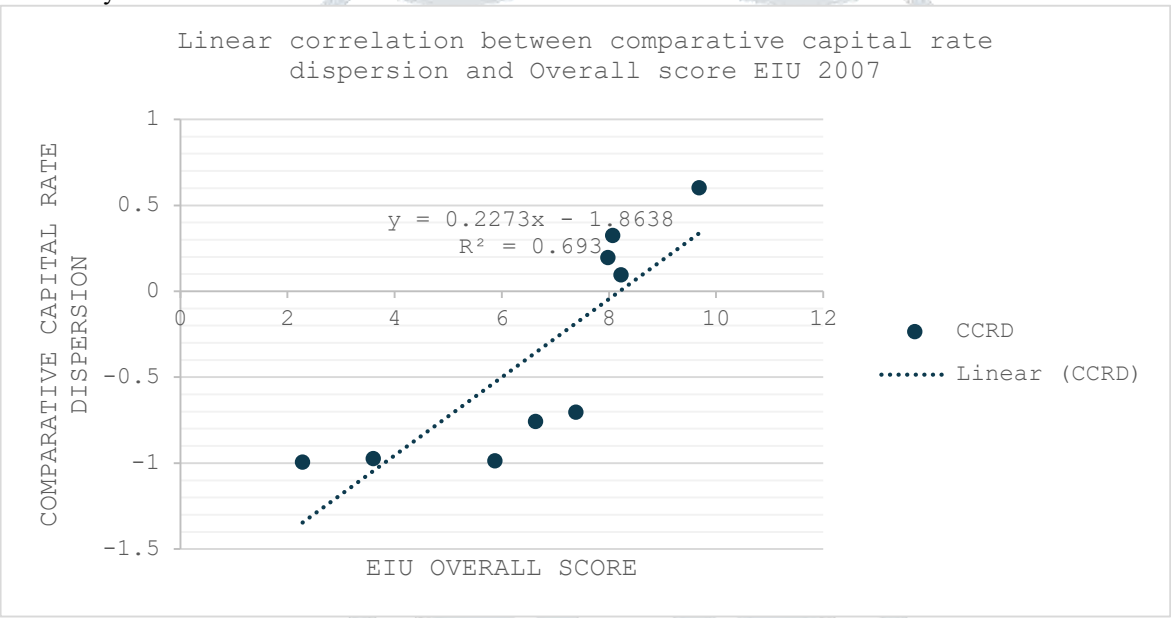


Figure 2: Linear correlation between the comparative capital rate dispersion and the EIU score in 2007
Source: Author's calculations based on estimates by the World Bank and the EIU

Figure 2 shows a correlation coefficient of 83% and a determination coefficient of 70% in 2007 between the comparative capital rate dispersion and the overall score of the EIU, confirming that the greater positive the comparative capital dispersion of a country is, the greater the level of democracy is.

Table 2: Correlations between comparative capital rate dispersion and the EIU score in 2011

Country	Rank	Overall score EIU	EPP	GF	PP	PC	CL	CRD	CCRD	EIU 2011
ARG	51	6,84	8,75	5,71	5,56	6,25	7,94	46,67844178	-0,594892808	Flawed Democracy
BRA	45	7,12	9,58	7,5	5	4,38	9,12	4,73E+01	-0,590748386	Flawed Democracy
DRC	155	2,15	2,58	1,07	2,22	3,13	1,75	0,707024655	-0,992334879	Authoritarian
BKF	124	3,59	4	3,57	2,22	3,75	4,41	2,602552072	-0,972071717	Authoritarian
MAL	63	6,36	8,25	6,43	4,44	5,63	7,06	4,551172804	-0,990271846	Flawed Democracy
NOR	1	9,8	10	9,64	10	9,38	10	8,32E+02	0,63809132	Full Democracy
FRA	29	7,77	9,58	7,14	6,11	7,5	8,53	3,13E+02	0,259641814	Flawed Democracy
ITA	31	7,74	9,58	6,43	6,67	7,59	8,53	2,16E+02	0,080265458	Flawed Democracy
U.S.	19	8,11	9,17	7,5	7,22	8,13	8,53	1,95E+02	0,030838116	Full Democracy

Source: Author's calculations based on estimates by the World Bank and the EIU

Table 2 shows that Argentina, Brazil, Burkina Faso, the Democratic Republic of the Congo and Mali have concave social spaces with different magnitudes and are characterized by the EIU as flawed democracies or authoritarian. It also shows that France, Italy, Norway and the United States have a convex social space with different magnitudes and are characterized by the EIU as full democracy for Norway and the United States and flawed democracy for France and Italy, even if both have a greater positive magnitude of comparative capital rate dispersion than the United States does.

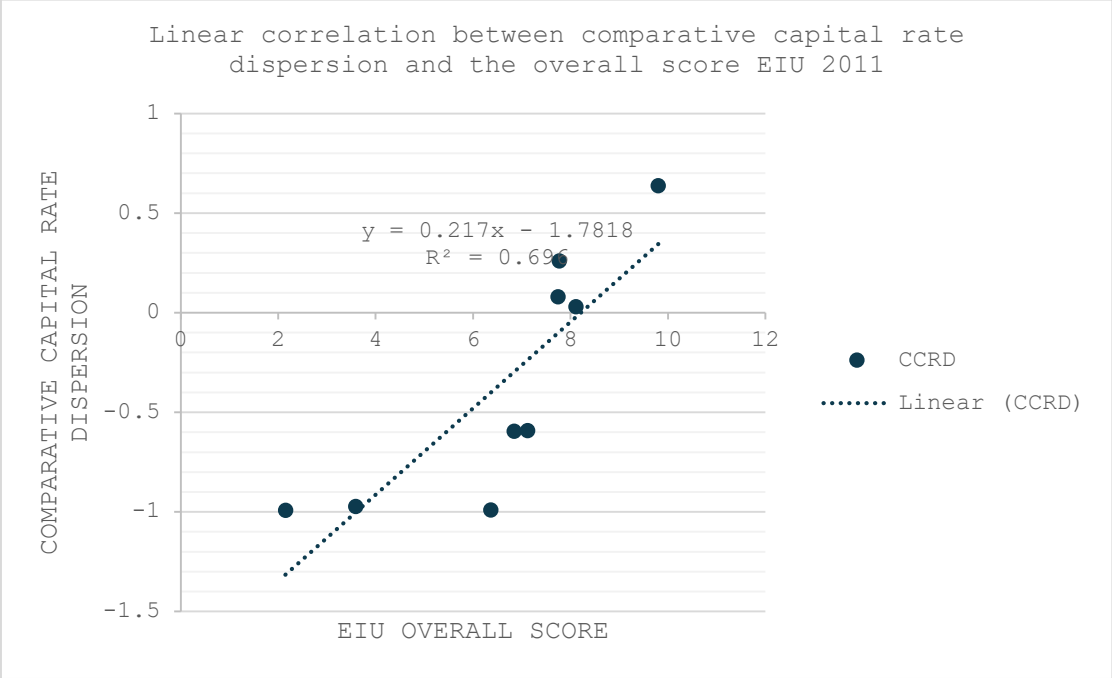


Figure 3: Linear correlation between the comparative capital rate dispersion and the EIU score in 2011
Source: Author's calculations based on estimates by the World Bank and the EIU

Figure 3 shows a correlation coefficient of 83% and a determination coefficient of 70% in 2011 between the comparative capital rate dispersion and the overall score of the EIU, confirming that the greater positive the comparative capital dispersion of a country is, the greater the level of democracy is.

Table 3: Correlations between comparative capital rate dispersion and the EIU score in 2015

Country	Rank	Overall score	EPP	GF	PP	PC	CL	CRD	CCRD	EIU 2015
ARG	50	7,02	9,17	5,36	6,11	6,25	8,24	5,92E+01	-0,434665317	Flawed Democracy
BRA	51	6,96	9,58	6,79	5,56	3,75	9,12	3,41E+01	-0,630593512	Flawed Democracy
DRC	157	2,11	0,92	0,71	2,78	4,38	1,78	1,006538139	-0,9866961	Authoritarian
BKF	106	4,7	4,42	4,29	4,44	5,63	4,71	2,403531004	-0,962833465	Hybrid Regime
MAL	88	5,7	7,42	3,93	4,44	6,25	6,47	3,655513339	-0,988891018	Hybrid Regime
NOR	1	9,93	10	9,64	10	10	10	628,3452475	0,613927854	Full Democracy
FRA	27	7,92	9,58	7,14	7,78	6,25	8,82	2,67E+02	0,279385908	Flawed Democracy
ITA	21	7,98	9,58	6,43	7,22	8,13	8,53	1,65E+02	0,045440485	Flawed Democracy
U.S.	20	8,05	9,17	7,5	7,22	8,13	8,24	1,95E+02	0,129369391	Full Democracy

Source: Author's calculations based on estimates by the World Bank and the EIU

Table 3 shows that Argentina, Brazil, Burkina Faso, the Democratic Republic of the Congo and Mali have concave social spaces with different levels of magnitude and are characterized by the EIU as flawed democracies, hybrid regimes or authoritarian regimes. It also shows that France, Italy, Norway and the United States have a convex social space with different magnitudes and are characterized by the EIU as full democracy for Norway and the United States and flawed democracy for France and Italy, even if both have a greater magnitude of comparative capital rate dispersion than the United States does.

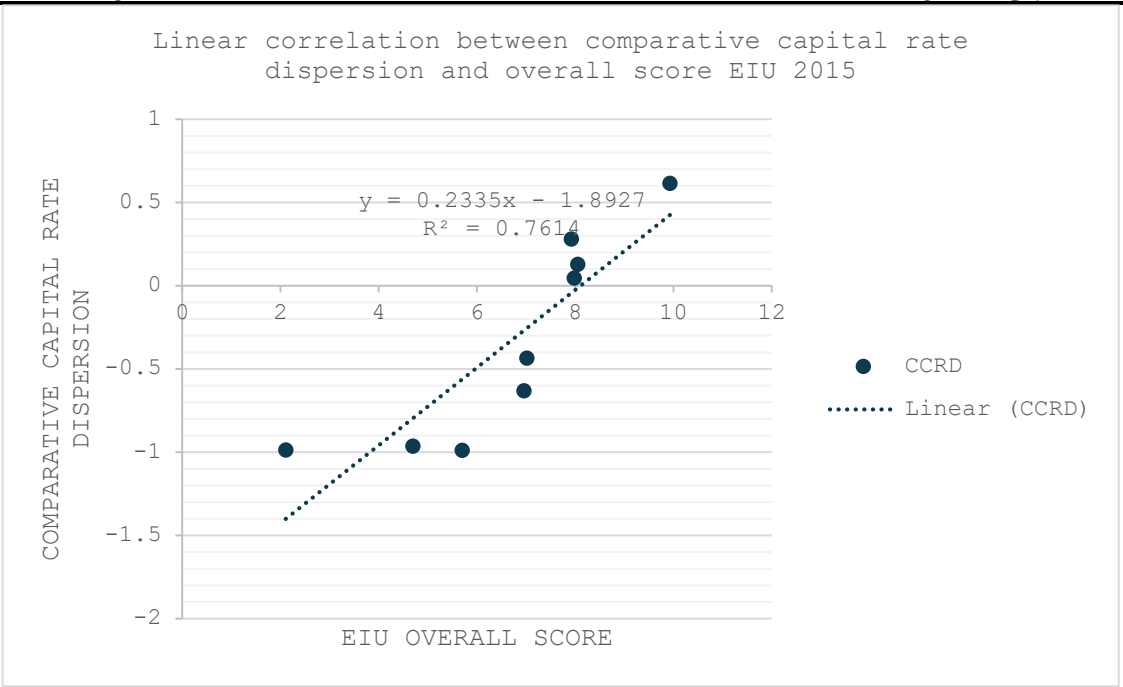


Figure 4: Linear correlation between the comparative capital rate dispersion and the EIU score in 2015
Source: Author's calculations based on estimates by the World Bank and the EIU

Figure 4 shows a correlation coefficient of 87% and a determination coefficient of 76% in 2015 between the comparative capital rate dispersion and the overall score of the EIU, confirming that the greater positive the comparative capital dispersion of a country is, the greater the level of democracy is.

Table 4: Correlations between comparative capital rate dispersion and the EIU score in 2019

Country	Rank	Overall score EIU	EPP	GF	PP	PC	CL	CRD	CCRD	EIU 2019
ARG	48	7,02	9,17	5,36	6,11	5	8,24	37,80796735	-0,617621035	Flawed Democracy
BRA	52	6,86	9,58	5,36	6,11	5	8,24	3,37E+01	-0,651692873	Flawed Democracy
DRC	166	1,13	0	0	1,67	3,13	0,88	0,916826854	-0,988600945	Authoritarian
BKF	112	4,04	3,92	2,71	4,44	5	4,12	3,646382335	-0,955420394	Hybrid Regime
MAL	100	4,92	6,42	3,07	3,89	5,63	5,59	3,409961108	-0,986407357	Hybrid Regime
NOR	1	9,87	10	9,64	10	10	9,71	665,0705117	0,612265108	Full Democracy
FRA	20	8,12	9,58	7,86	7,78	6,88	8,53	2,98E+02	0,30197829	Full Democracy
ITA	35	7,52	9,58	6,07	7,78	6,25	7,94	1,81E+02	0,062317192	Flawed Democracy
U.S.	25	7,96	9,17	7,14	7,78	7,5	8,24	2,18E+02	0,152916815	Flawed Democracy

Source: Author's calculations based on estimates by the World Bank and the EIU

Table 4 shows that Argentina, Brazil, Burkina Faso, the Democratic Republic of the Congo and Mali have concave social spaces with different levels of magnitudes and are characterized by the EIU as flawed democracies, hybrid regimes or authoritarian regimes. It also shows that France, Italy, Norway and the United States have a convex social space, with different magnitudes and are characterized by the EIU as full democracy for Norway and France and flawed democracy for Italy and the United States, corresponding to the level of the comparative capital rate dispersion of these countries.

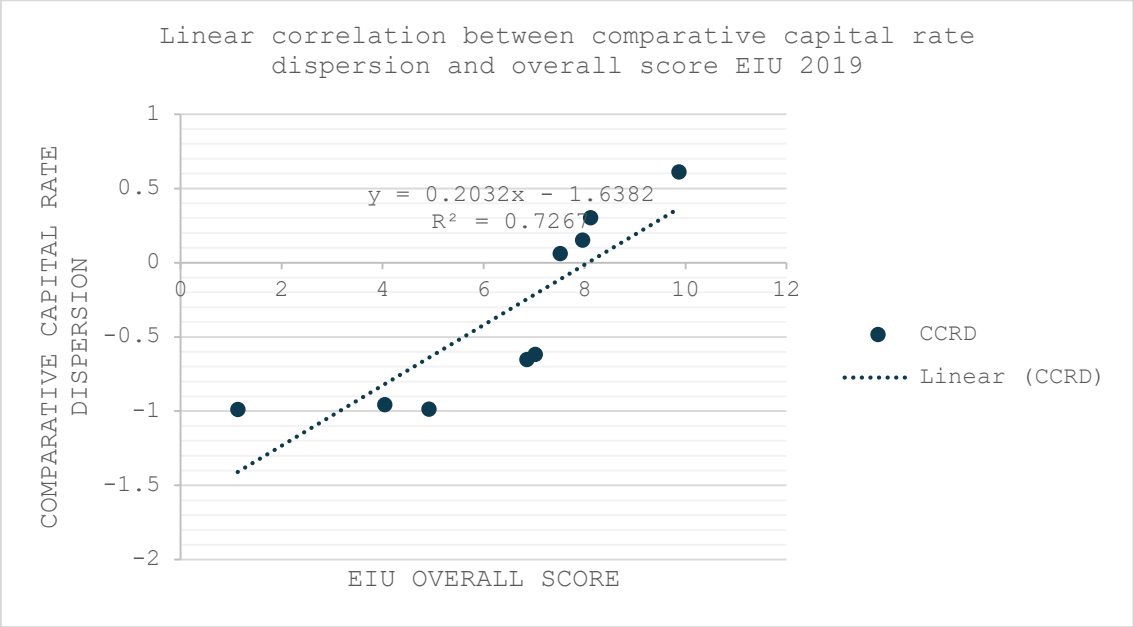


Figure 5: Linear correlation between the comparative capital rate dispersion and the EIU score in 2019
Source: Author's calculations based on estimates by the World Bank and the EIU

Figure 5 shows a correlation coefficient of 82% and a determination coefficient of 72% in 2019 between the comparative capital rate dispersion and the overall score of the EIU, confirming that the greater positive the comparative capital dispersion of a country is, the greater the level of democracy is.

Table 5: Correlations between comparative capital rate dispersion and the EIU score in 2023

Country	Rank	Overall score EIU	EPP	GF	PP	PC	CL	CRD	CCRD	EIE 2023
ARG	54	6,62	9,17	5	7,22	3,75	7,94	5,48E+01	-0,532974861	Flawed Democracy
BRA	51	6,68	9,58	5,36	6,11	5	7,35	3,83E+01	-0,6491049	Flawed Democracy
DRC	160	1,68	1,17	0,43	2,78	3,13	0,88	1,113693433	-0,987700934	Authoritarian
BKF	133	2,73	0	2,5	3,89	3,75	3,53	4,714382829	-0,948951692	Authoritarian
MAL	137	2,58	0	0	5	4,38	3,53	3,789346601	-0,986486608	Authoritarian
NOR	1	9,81	10	9,64	10	10	9,41	7,28E+02	0,603532717	Full Democracy
FRA	23	8,07	9,58	7,86	7,78	6,88	8,24	3,25E+02	0,287119758	Full Democracy
ITA	34	7,69	9,58	6,79	7,22	3,75	7,94	2,02E+02	0,05824727	Flawed Democracy
U.S.	29	7,85	9,17	6,43	8,89	6,25	8,53	2,65E+02	0,190156395	Flawed Democracy

Source: Author's calculations based on estimates by the World Bank and the EIU

Table 5 shows that Argentina, Brazil, Burkina Faso, the Democratic Republic of the Congo and Mali have concave social spaces with different levels of magnitude and are characterized by the EIU as flawed democracies or authoritarian regimes. It also shows that France, Italy, Norway and the United States have a convex social space with different magnitudes and are characterized by the EIU as full democracy for Norway and France and flawed democracy for Italy and the United States, corresponding to the level of the comparative capital rate dispersion of these countries.

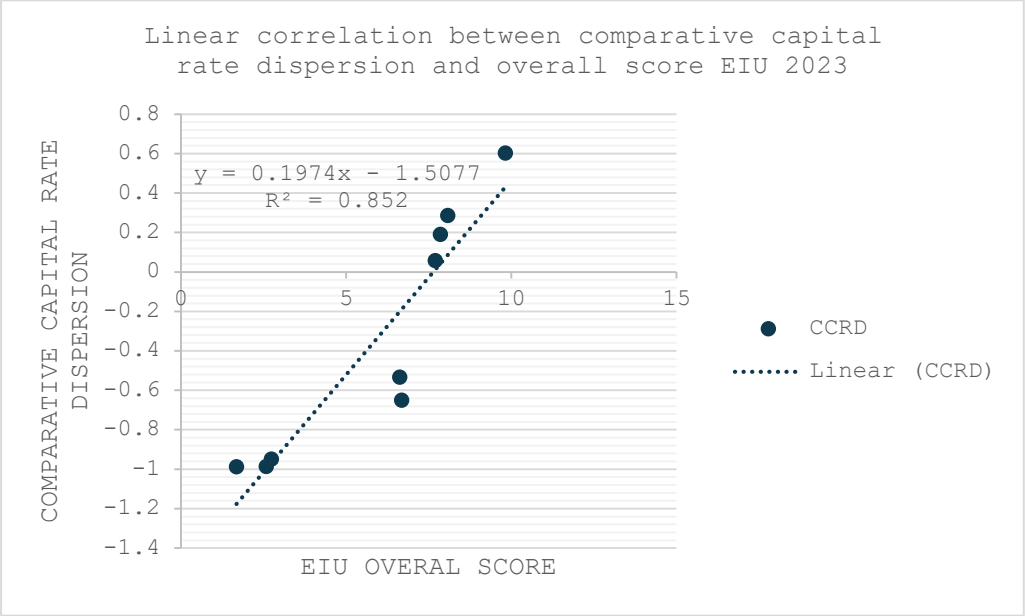


Figure 6: Linear correlation between the comparative capital rate dispersion and the EIU score in 2023
Source: Author's calculations based on estimates by the World Bank and the EIU

Figure 6 shows a correlation coefficient of 92% and a determination coefficient of 85% in 2023 between the comparative capital rate dispersion and the overall score of the EIU, confirming that the greater positive the comparative capital dispersion of a country is, the greater the level of democracy is.

Table 6: Comments between comparative capital rate dispersion and the overall EIU score in 2023

Country	Overall score EIU 2023	CCRD 2023	Comment EIU 2023	Comment PTF
NOR	9,81	0,6	Full democracy	High positive CCRD, high convex social space, low political polarization in the national level
FRA	8,07	0,28	Full democracy	Middle positive CCRD, middle convex social space, increasing political polarization in the national level
U.S.	7,85	0,19	Flawed democracy	Low positive CCRD, low convex social space, increasing political polarization in the national level
ITA	7,69	0,06	Flawed democracy	Low positive CCRD, low convex social space , increasing political polarization in the national level
BRA	6,68	-0,65	Flawed democracy	High negative CCRD, high concave social space, maximum political polarization
ARG	6,62	-0,53	Flawed democracy	High negative CCRD, high concave social space, maximum political polarization
BKF	2,73	-0,94	Authoritarian	Very high negative CCRD, high concave social space, armed confrontation
Mali	2,53	-0,98	Authoritarian	Very high negative CCRD, high concave social space, armed confrontation
DRC	1,68	-0,99	Authoritarian	Very high negative CCRD, high concave social space, armed confrontation

Source: Author's calculations based on estimates by the World Bank and the EIU

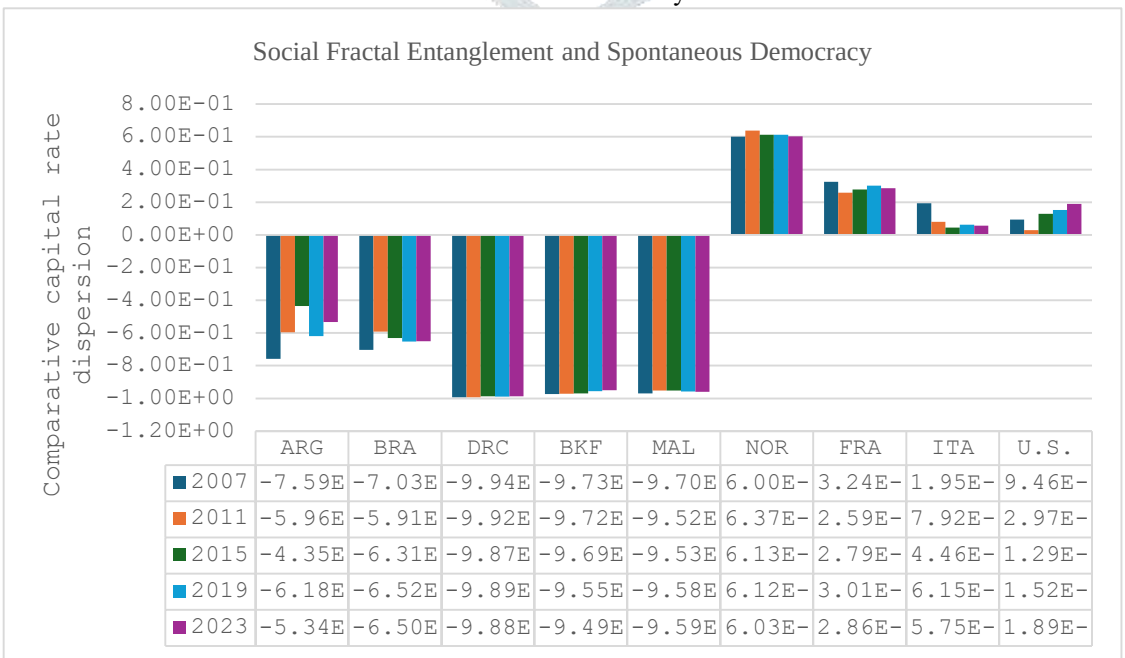


Figure 7: Comparative capital rate dispersion 2007–2023

Source: Author's calculations based on estimates by the World Bank

Conclusion

Figure 7 and Table 6 show that the comparative capital rate dispersion of a country tends to -1, the more its level of democracy is deteriorating, and the more the comparative capital dispersion of a country tends to +1, the more its level of democracy is improving. This confirms the emergence of spontaneous democracy in each country due to the social fractal entanglement between countries in international society.

The formula CRDi = PEi/(PSixGCi) (6), which is used to estimate the capital rate dispersion of each country, demonstrates that, according to the Mussolini-Milei linear equation, an increase in public expenditure triggers the impoverishment of a country, which is not true because when the public expenditure of a country decreases without a decrease in population size and the level of inequality at the national level, the comparative capital rate dispersion tends toward -1 at the international level, and the national social space becomes a concave social space, where the emergence of an authoritarian regime or territorial fragmentation is inevitable.

The proposition Q is proven true; therefore, the proposition P is true.

The spontaneous democracy that emerges is dictated by the social fractal entanglement of international society regardless of the claimed theoretical political framework by the country.

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