



FORMAL CONCEPT ANALYSIS AND THE PROBLEM OF DEMOCRACY EVALUATION : POSSIBLE TOOL FOR KNOWLEDGE DISCOVERY AND " COMPARING THE COMPARATORS"

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RESEARCH QUESTION

How to make sense of various “Democracy Indexes” provided by different Democracy Ranking Agencies , particularly, when they seriously differ and look uncomparable

GOAL

This paper seeks to respond to the challenge of assessing, choosing and application of multiple Democracy Indices and suggests several possible research techniques of knowledge discovery out of numerical data and aggregated indicators, produced by different Democracy Ranking Agencies, that seem incompatible.

KEY WORDS

Key words: formal concept analysis, democracy evaluations, knowledge discovery, policy work, global governance

PROBLEM

This data for comparative analysis is collected and aggregated by different international comparators, which use diverse methods, indices and techniques. Our assumption is that creation of indices on the issues involving politics and political interests – like democracy and human rights – does include a great deal of “**human factor**” – including different **biases**, from ideologies to actor interests to individual preferences, that define what is to be measured and how it should be done.

POSSIBLE SOLUTION

In search for alternative tools of analysis we turned to mathematical methods – but concentrating not to the more traditional use of statistical analysis, but on the branch of mathematics called Formal Concept Analysis (FCA). In our research we use the FCA approach developed by Birkhoff G. “Lattice theory”, published in Providence, USA (1973) and Ganter, B., Wille, R. “Formal Concept Analysis: Mathematical foundations”, Springer, Berlin (1999).

FCA provides tools for understanding the structure of data given as a set of objects with certain descriptions (e.g., in terms of attributes they possess), which is done by representing the data as a hierarchy of concepts, or more exactly, a concept lattice (in the sense of lattice theory).

PAPER STRUCTURE

- Formal Concept Analysis as a universal mathematical method of working with qualitative data and its contribution to the set of tools of Democracy Evaluation
- The power of " democracy indicator". Challenge of conceptualization, scope of concept, competition of concepts meaning and value of indicators. How can visualization help
- Actor-centered approach to Democracy Evaluation : who are the judges?
The analytical portraits of Democracy Evaluation Agencies
 - ✓ Freedom House,
 - ✓ Bertelsmann Foundation,
 - ✓ Center for Systemic Peace,
 - ✓ Economist Intelligence Unit.
- Formal Concept Analysis as a tool of " comparing the comparators". An insight into the "logic of knowledge" produced by Democracy Ranking Agencies

DEFINITION OF FCA APPROACH

Both FCA founding fathers - Rudolf Wille and Bernhard Ganter (Ganter, Wille, 1999) - and broader research community often referred to FCA in contemporary academic literature together with "concept lattices" and "knowledge discovery", (Venter, at all...1997; Wille, 2002; Kumar Aswani, 2011; Stumme, 2009; Jiang , at all 2007)

Venter had explained back in 1997, " the rapid pace at which data gathering, storage and distribution technologies are developing...to help humans to analyze, understand and digest " those vast amounts of data, which had led, in turn, to the " birth of knowledge discovery in databases - KDD - and data mining - a process that has a goal to " selectively extract knowledge from data".

KNOWLEDGE DISCOVERY

Wille is proving this interrelation to be even more explicit " **concepts** are the basic units of **human thought** ...and the basic structures of logic", concept lattices, as mathematical abstraction of concept systems, can **support humans** to discover information and **create knowledge**".

:

- **Information** = Data + Meaning , and
 - **Knowledge** = Internalized information + Ability to utilize the information"
- (Wille, 2002)

We argue, that FCA approach, by making logical concept connections **visible**, allows to see connections between concepts, that are impossible to be found otherwise, hence helping new **knowledge discovery**.

Democracy Ratings Agencies and corresponding schemes of democracy conceptualization					
Associated Meanings	Electoralist Definition	Procedural Minimum Definition	Expanded Procedural Minimum Definition	Prototypical Conception of Established Industrial Democracy	Maximalist Definition/Conception
Reasonably competitive elections, devoid of massive fraud, with broad suffrage	Yes	Yes	Yes	Yes	Often not included
Basic civil liberties: Freedom of speech, assembly, and association		Yes	Yes	Yes	Often not included
Elected governments have effective power to govern			Yes	Yes	Often not included
Additional political, economic, and social features associated with industrial democracy				Yes	Often not included
Socioeconomic equality; and/ or high levels of popular participation in economic, social, and political institutions					Yes
EXAMPLES OF INDEXES	Vanhanen's index of democracy	-	Polity IV Project - Fragility Index	BTI Democracy Index FH Freedom in the World FH Nations in Transit	BTI Status Index Economist Democracy Index ⁷

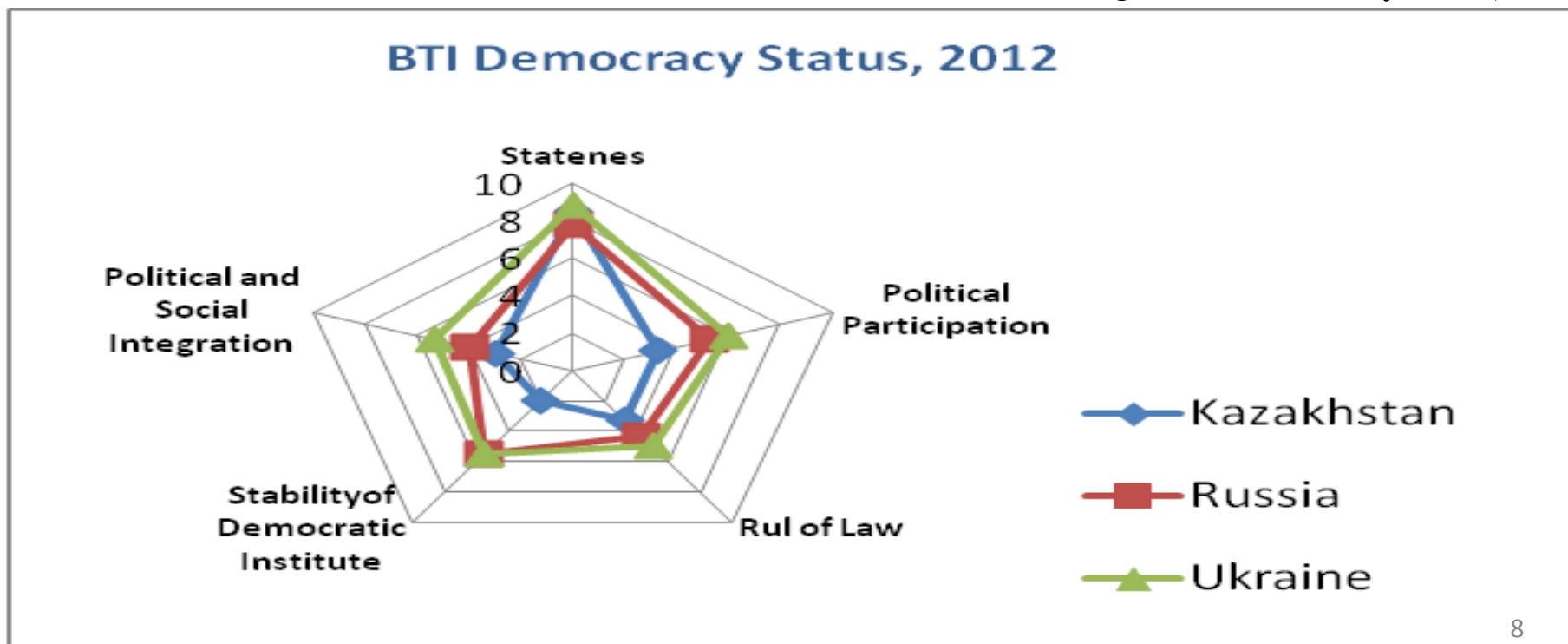
BTI Democracy Status, 2012 (integrated part of BTI Status Index)

	Statenes	Political Participation	Rule of Law	Stability of Democratic Institute	Political and Social Integration
Kazakhstan	8,5	3,3	3,3	2	3
Russia	7,8	5,3	4,3	5,5	4
Ukraine	8,8	6	5	5,5	5,3

Ratings are based on a scale of 1 to 10, with 1 representing the lowest level and 10 the highest level of democratic development

Sources : <http://www.bti-proiect.org/home/>

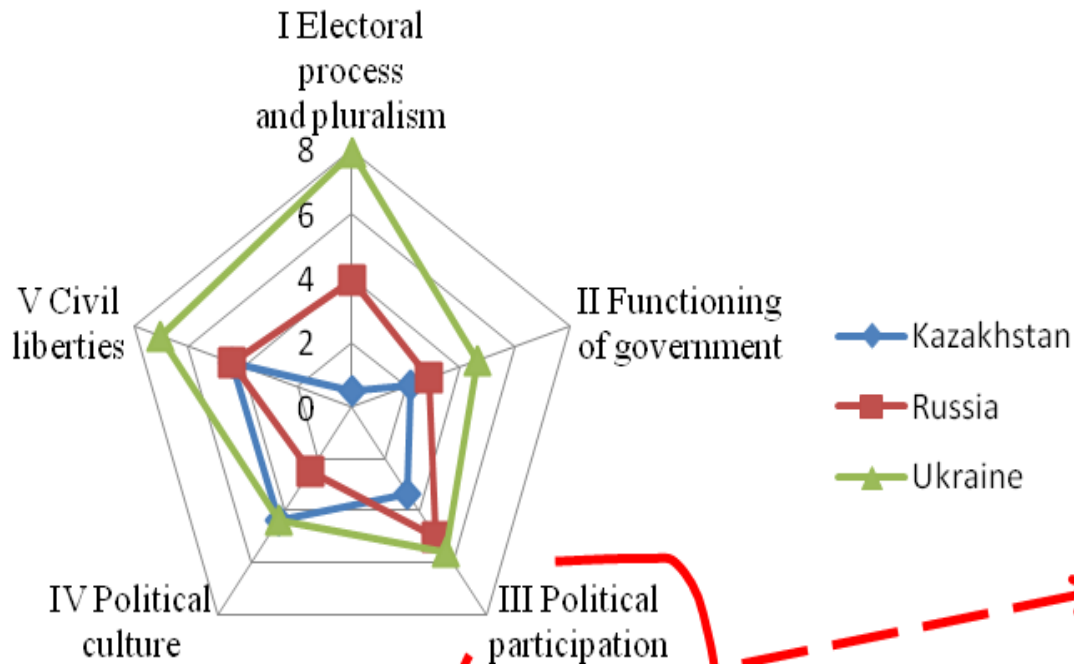
Fig. 2. BTI Democracy Status, 2012



EIU Democracy Index, 2012

	I Electoral process and pluralism	II Functioning of government	III Political participation	IV Political culture	V Civil liberties
Kazakhstan	0,5	2,14	3,33	4,38	4,41
Russia	3,92	2,86	5	2,5	4,41
Ukraine	7,92	4,64	5,56	4,38	7,06

EIU Democracy Index 2012



- voter participation
- minorities autonomy
- women in parliament
- Membership in parties and political NGOs
- citizens' engagement with politics
- preparedness to participation in lawful demonstrations.
- adult literacy
- adult population interest to follow politics in the news
- authorities promotion of political participation

CSP POLITY IV REPORT, FRAGILITY INDEX, 2012

	Institutionalized Democracy	Regulation of Participation	The Competitiveness of Participation
Kazakhstan	0	3	2
Russia	5	3	4
Ukraine	6	2	3

Score ranges from +10 (full democracy) to -10 (full autocracy). Each of the Matrix indicators is rated on a four-point fragility scale: 0 "no fragility," 1 "low fragility," 2 "medium fragility," and 3 "high fragility" with the exception of the Economic Effectiveness indicator, which is rated on a five-point fragility scale (including 4 "extreme fragility"). The State Fragility Index, then, combines scores on the eight indicators and ranges from 0 "no fragility" to 25 "extreme fragility." A country's fragility is closely associated with its state capacity to manage conflict; make and implement public policy; and deliver essential services and its systemic resilience in maintaining system coherence, cohesion, and quality of life; responding effectively to challenges and crises, and sustaining progressive development.

Sources : <http://www.systemicpeace.org/>

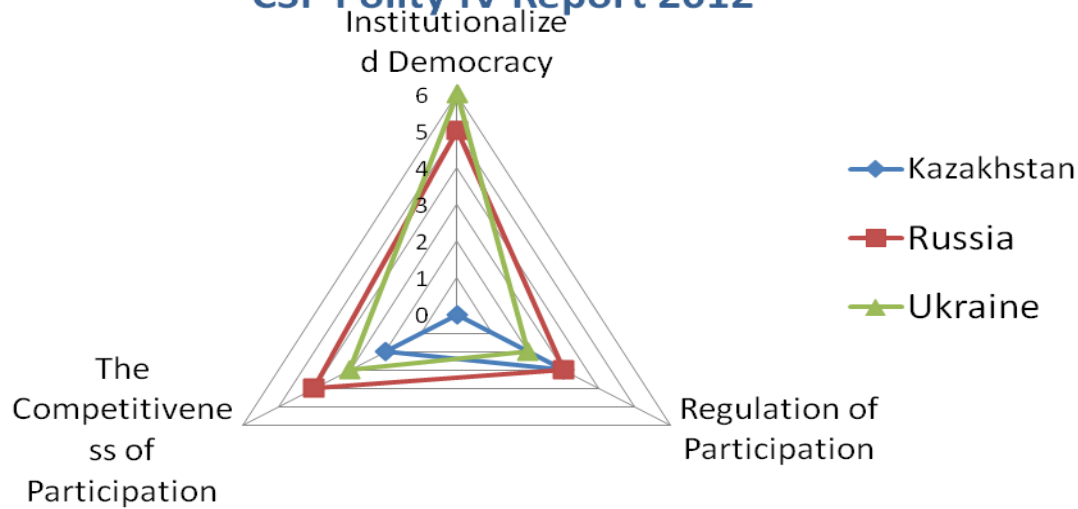
FH NATION IN TRANSIT INDEX, 2012

	Electoral Process	Civil Society	Independent Media	Judicial Framework and Independence	Corruption
Kazakhstan	6,75	6	6,75	6,5	6,5
Russia	6,75	5,25	6,25	6	6,5
Ukraine	3,75	2,75	4	6	6

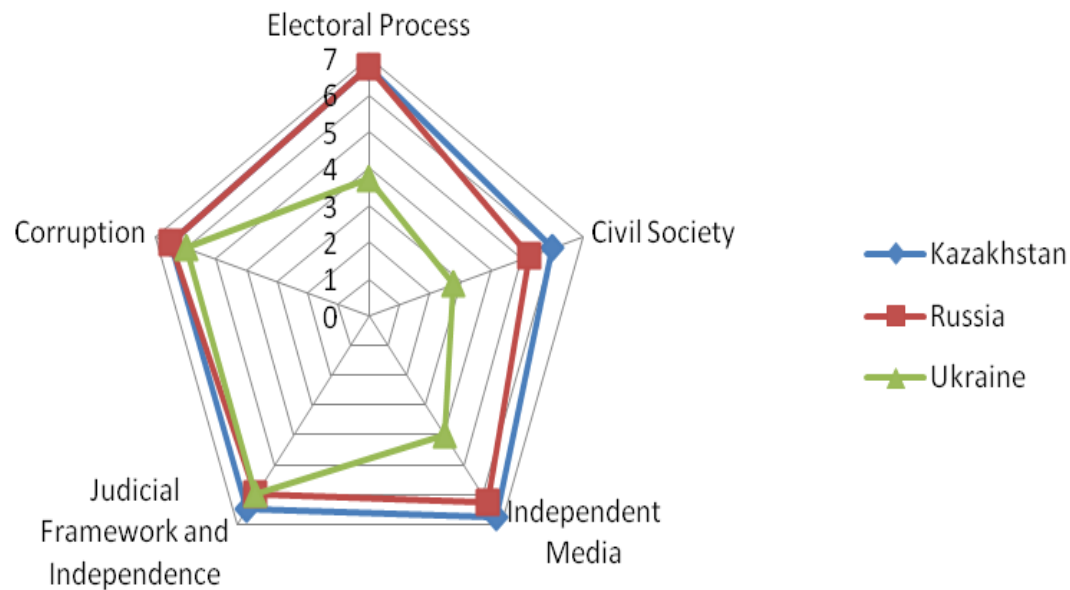
Ratings are based on a scale of 1 to 7, with 1 representing the highest level and 7 the lowest level of democratic development

Sources : <http://www.freedomhouse.org>

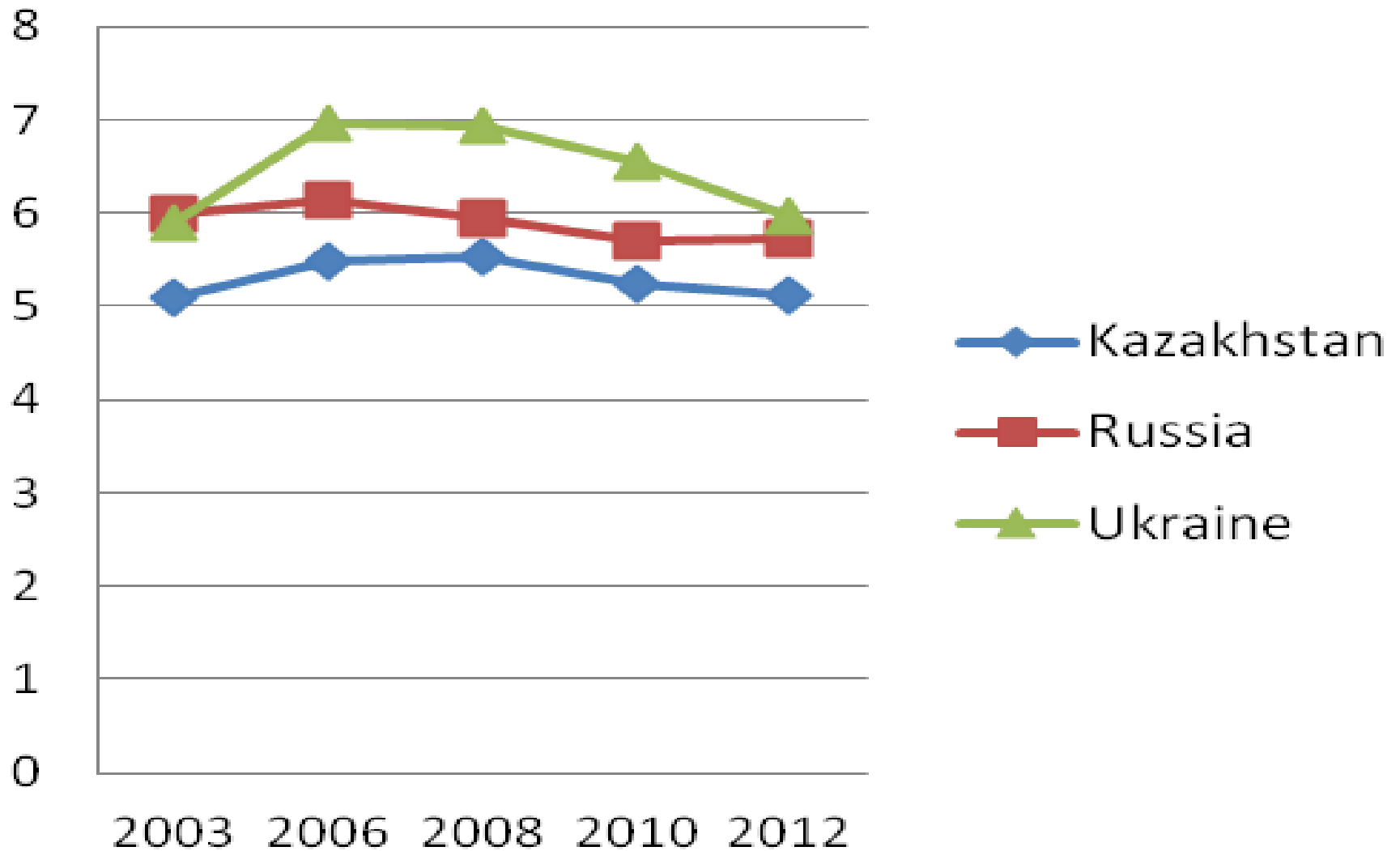
CSP Polity IV Report 2012



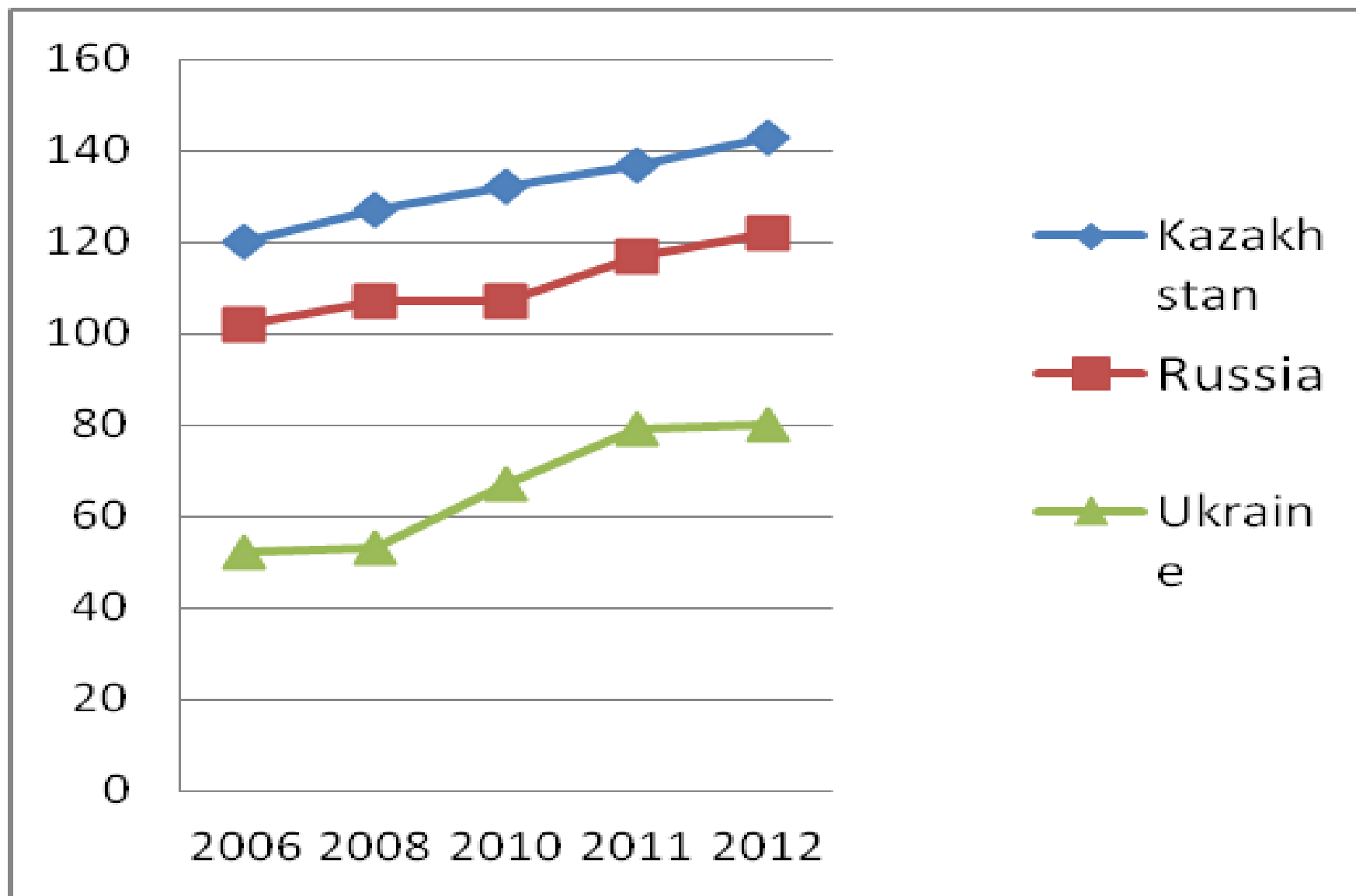
FH Nation in Transit Index, 2012



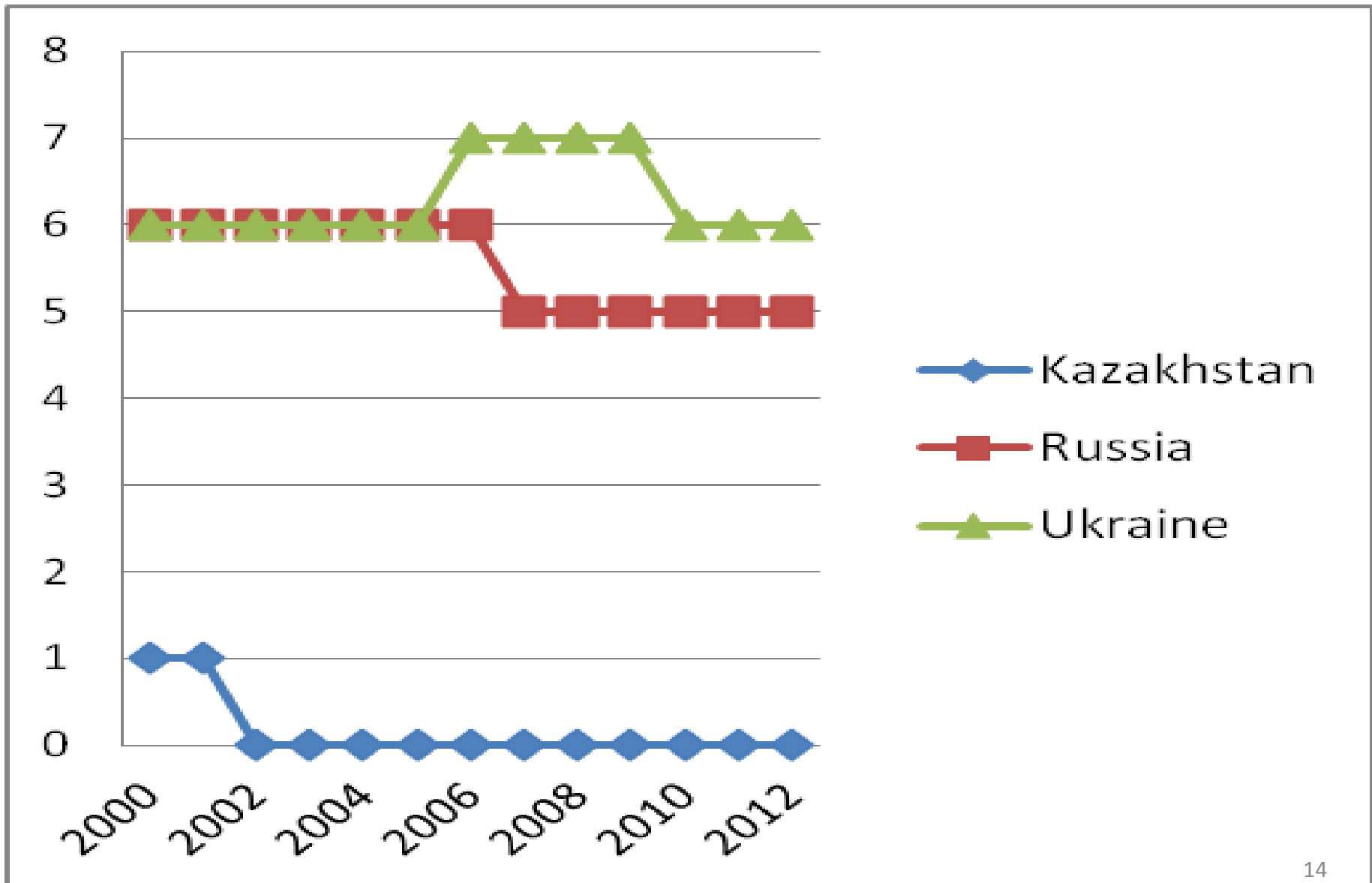
BTI DEMOCRACY STATUS, 2003 – 2012



EIU DEMOCRACY INDEX, 2003 - 2012



CSP POLITY IV REPORT, FRAGILITY INDEX



FH Nation in Transit Index

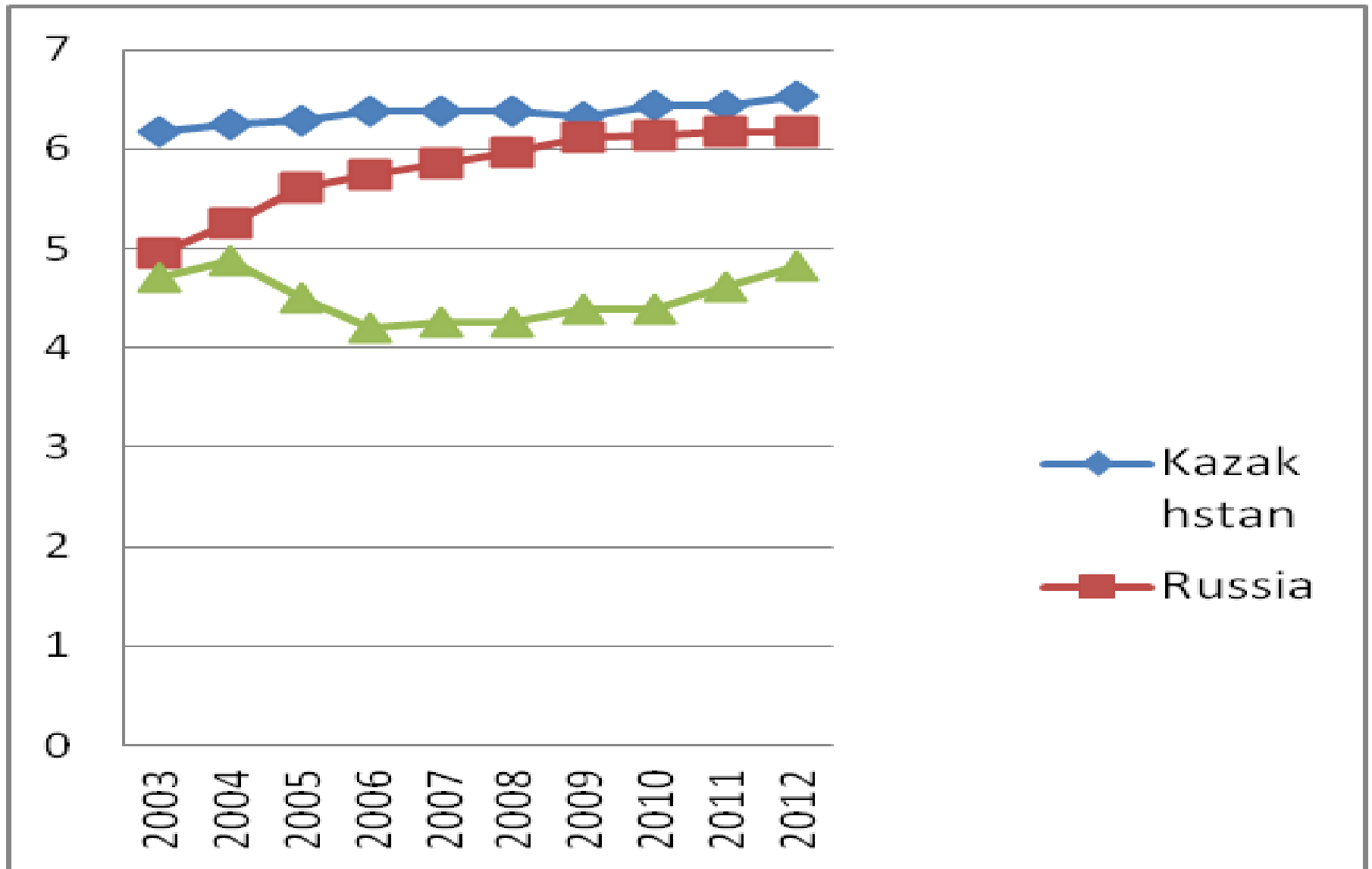


Fig. 6. BTI Democracy Status, 2003 – 2012



Fig.7. EIU Democracy Index, 2003 - 2012

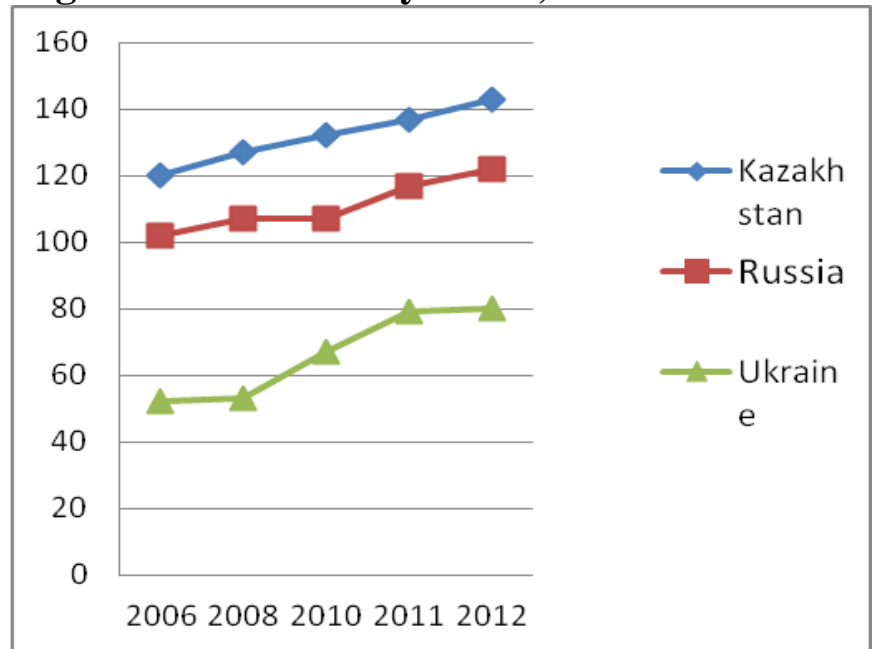


Fig.8. CSP Polity IV Report, Fragility Index

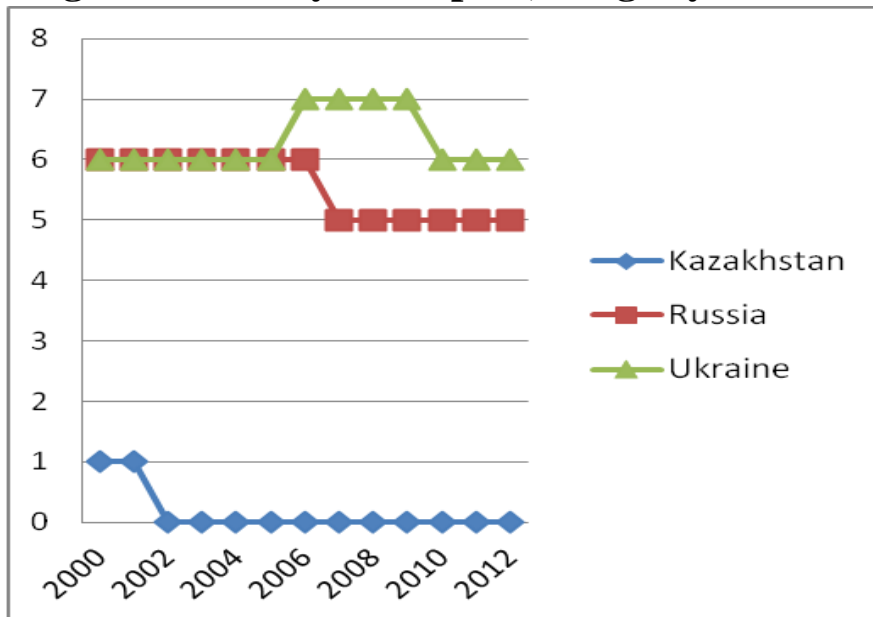
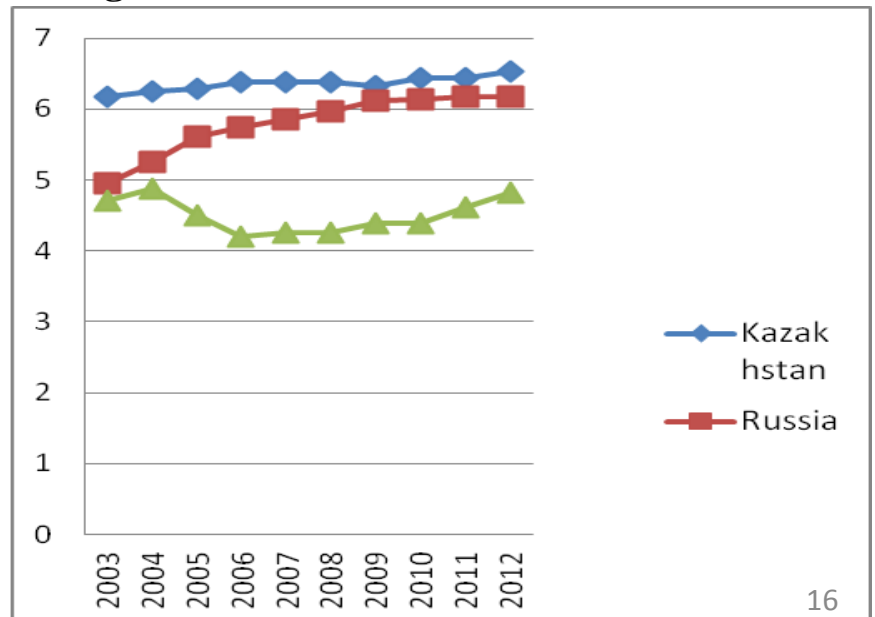


Fig.9. FH Nation in Transit Index



ACTOR-CENTERED APPROACH TO DEMOCRACY EVALUATION : WHO ARE THE JUDGES?

Bertelsmann Foundation

To sum up the "actor - portrait", BTI is a private German Foundation, and same-name think-tank created by media-magnate family, building its consulting and advising powers to policy-makers, claiming the drive for liberal values.

Center for Systemic Peace

To sum up the "actor- portrait", CSP is an American NGO, connected to a University-based research center, whose several projects, including Polity IY Project are commissioned to university professors by US Security Agencies

Freedom House

The Freedom House "actor-portrait" is, probably, most transparent - it is an ideology-based American activist NGO, commissioning country-experts to provide " scores according to guidelines". Its ideology, according to web-site , is "fighting communism ", most funding comes out of regular grants from US Government

Economist Intelligence Unit

To sum up, the EIU is first and foremost a part of UK-based media business, dividing their shares equally between Economist-group company and individual journalists . EIU creates a number of analytical products that are sold successfully in open market, making it sustainable

WHAT DO THEY REALLY DO WHILE “RANKING DEMOCRACIES”

Freedom House is "fighting communism" and measuring "level of freedom"

Center for Systemic Peace is monitoring level of political violence and measuring "country governance fragility", predicting possible new violent conflicts or emerging "failed states"

Economist Intelligence Unit is widening its media-consulting business, attracting new business clients through quality non-business analytical products, while

Bertelsmann Foundation is building its own influence among global policy-makers, trying to become an influential actor through consultancy services .

REDUCTION OF PARAMETERS BY THE MEANING OF ASSESSED PHENOMENA

EIU Democracy Index	BTI Status Index	Freedom House Nations in Transit Index	CSP Polity IV Report	Notes on reductions
Electoral process and pluralism		Electoral Process	Regulation of Participation (Pluralism)	“Regul-on of Particip-on” reduced to “Pluralism”
Political participation	Political Participation		The Competitiveness of Participation	
Functioning of government	Statenes			
	Stability of Democratic Institute (Institutionalized Democracy)		Institutionalized Democracy	“Stability of Democratic Institute” reduced to “Institutionalized Democracy”
	Rule of Law	Judicial Framework and Independence (Rule of Law)		“Judicial Framework and Independence” reduced to “Rule of Law”
Civil liberties		Civil Society		
	Political and Social Integration			
		Corruption		
		Independent Media		
Political culture				

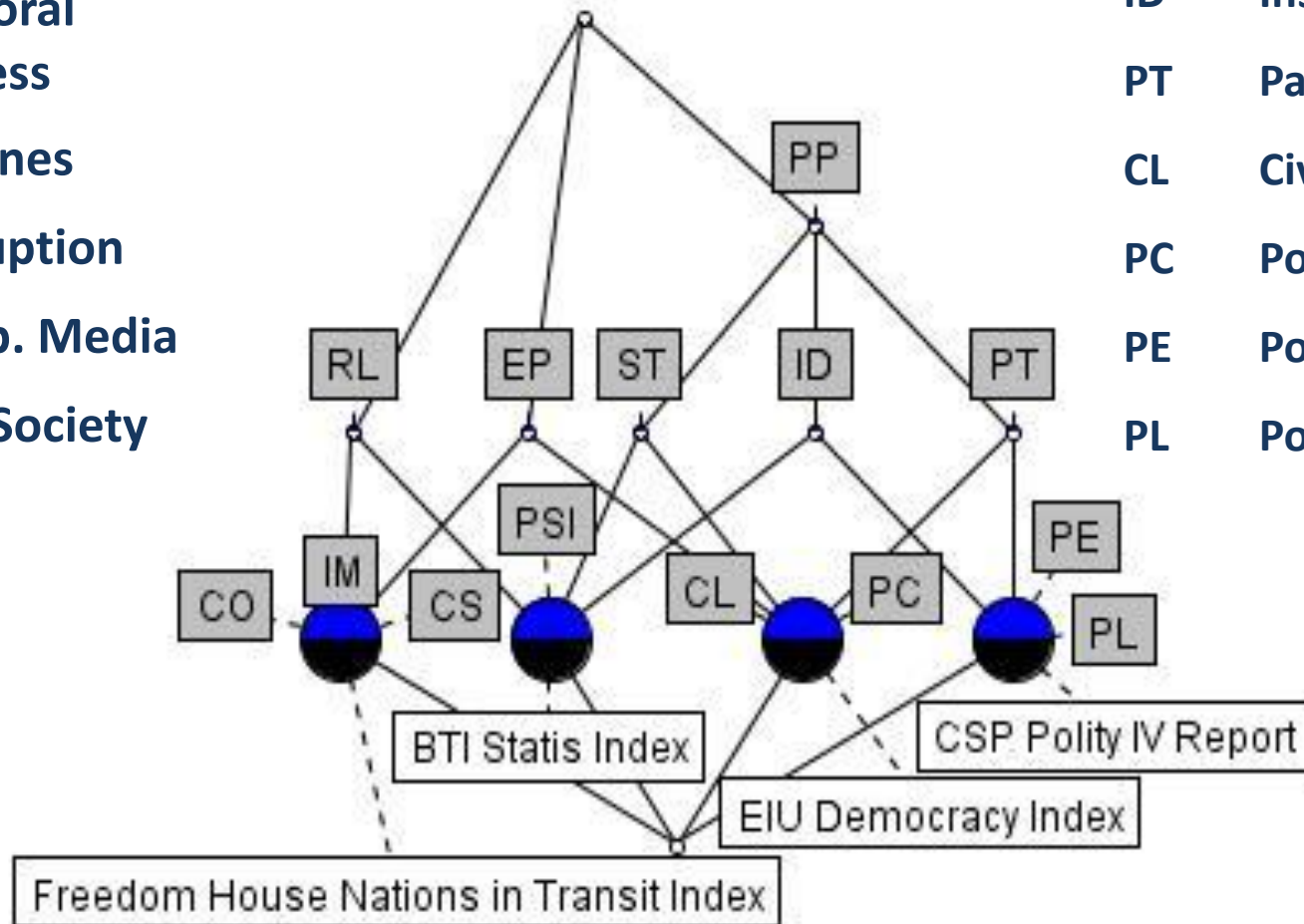
FCA PREPARATORY TABLE : DEMOCRACY RANKING AGENCIES AS OBJECTS AND MEASURED PARAMETERS AS ATTRIBUTES

Main parameters used		Electoral Process	Statenes	Political Pluralism	Political Culture	Civil Liberties	Rull of Law	Institutional Democracy	Political & Social Integration	Civil Society	Independent Media	Corruption	Political Effectiveness	Political Legitimacy	Participation
		EP	ST	PP	PC	CL	RL	ID	PSI	CS	IM	CO	PE	PL	PT
Agencies providing Democracy Ratings	EIU Democracy Index	X	X	X	X	X									X
	BTI Statis Index		X	X			X	X	X						
	Freedom House Nations in Transit Index	X					X			X	X	X			
	CSP Polity IV Report			X				X					X	X	X

Concept lattice of parameters used by Democracy Ranking Agencies

RL Rule of Law
EP Electoral Process
ST Statenes
CO Corruption
IM Indep. Media
CS Civil Society

PP Public Policy
ID Inst. Democracy
PT Participation
CL Civil Liberties
PC Political Culture
PE Polit Effectiven.
PL Polit Legitimace



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