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WICI EUROPE – GLOBAL WICI NETWORK

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“INTANGIBLES: EUROPEAN STATE OF THE ART”

BOARD CAPITAL IN AN EMERGING CAPITAL MARKET: EMPIRICAL EVIDENCE FROM RUSSIAN COMPANIES

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INTRODUCTION

Relevance of the study

- Intangible-driven economy puts emphasis on Intellectual Capital of a firm;
- Lack of empirical studies on emerging markets;
- Short history of corporate governance traditions in Russia
- Companies need to have the right skills and leadership in place to lead the change

Contribution (Novelty)

- Developing approach to measure Board Capital (we tried Common Factor Analysis and done with Index Approach);
- This research is among the first which analyze relationship between Board Capital and firm's performance on the market with developing corporate governance traditions;
- Study presents empirical evidence of moderating effect of CEO power on Board Capital effectiveness

Research question (Purpose)

Research question:

Does Board Capital contribute to the future performance of a company operating in the environment of weakly efficient market / developing corporate governance traditions?

Practical meaning

- Results of the study may be useful for experts and regulators in further development of KPI for boards to observe and monitor their IC;
- Useful for firms in countries with emerging governance traditions, since they provide vision of board characteristics which are significant for boosting the performance.

LITERATURE REVIEW AND HYPOTHESES

Agency theory

- “Classic” approach for analyzing the relationship between firm’s performance and role of a board;
- Main function of a board is **to monitor and control** over the management;
- Indirect impact on firm’s performance;
- Analysis of board characteristics which may improve monitoring (CEO-duality, Board Size, Board Independency);
- No conventional wisdom, contradictory results.

Literature: Filatotchev & Wright, 2005; McCahery & Vermeulen, 2014; Abdullah, 2004; Gordon, 2007; Masulis & Mobbs, 2011; Pérez-Calero et al., 2016.

Resource-based theory

- Company’s success is predetermined by resources it has;
- Board **provides resources:**
 - Information in the form of advice;
 - Access to external information;
 - Preferential access to resources;
 - Legitimacy;
- Strong empirical support.

Literature: Pfeffer and Salancik, 1978; Hillman & Dalziel, 2003; Hillman et. al., 2009; Haynes and Hillman, 2010; Pérez-Calero, 2016; Darmadi, 2013; Johl et al., 2015; Chen, 2014; Connelly et al., 2011; Feng et al., 2018

MOTIVATION

- *Board Capital* is a set of human and social capitals of directors taken on board-level (Hillman & Dalziel, 2003)
- *Board Capital breadth* - the heterogeneity of the board such as education, experience, age and tenure (Haynes and Hillman, 2010) based on research of group heterogeneity and its effectiveness.
- *Board capital depth* (Haynes and Hillman, 2010) - the embeddedness of the board in the focal firm's industry, board expertise and social ties within it.
- Board capital should contribute to decision-making in company and, in its turn, to the firm performance
- **Contradiction:** we fail to find the evidence that directors' age, education or experience contribute to firm performance in Russia (and the results for other emerging markets are mixed)

What are the reasons?

MOTIVATION

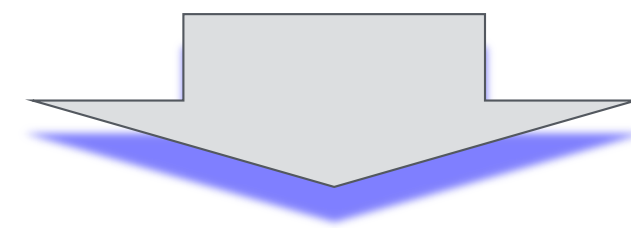
- What are the reasons?

IDEA 1: *Interconnection* of board's functions, so different types of directors' experience and education can [not only complement but also] **substitute** each other => wrong methods and/ or rough measures

IDEA 2: In markets with emerging governance traditions Board has **low power** and CEO has high power => Board has slight influence on the decisions made in the company

We need a new method

We should control CEO/ Board power



MOTIVATION

- IDEA 1: Directors' experience and education can substitute each other =>
- OUR methods
 - Factor analysis [with validation] (Chemmannur et al., 2016);
 - Index approach (Haynes and Hillman, 2010)

LITERATURE REVIEW AND HYPOTHESES (3/3)



Hypotheses

H1: Board capital positively affects the future operating performance of a firm

“The Board Capital as source of crucial resources for company’s success and competitive advantage is expected to have positive relationship with future operating performance. Board capital acts as a source of resources which not only enhance monitoring effectiveness, but also reduce information asymmetry”

H2: Board capital positively affects current market valuation of a firm

“High level of Board Capital may provide management with better advising which will result in implementation of better strategies and investment projects. Since market value of the firm depends on investors’ expectation of future investment projects we anticipate positive relationship between firm’s board capital and current market valuation”

H3: CEO power moderates the effectiveness of board capital, such that under CEO power the influence of board capital on firm’s performance is lower

“Key executive has his(her) own preferences regarding to firm’s development and strategic changes. We expect that in the case of powerful CEO, he/she may press his(her) proposals and thus diminish Board Capital effectiveness”

VARIABLES FOR THE RESEARCH MODEL

Variable description

Variable	Description
Characteristics of a board	
Age_D	Index of diversity for age with five categories: 40 and younger, 40–49, 50–59, 60–69, 70 years old and older.
Degree	Fraction of directors who hold PhD degree or higher.
MBA	Fraction of directors who hold MBA degree.
Tenure_D	Index of diversity for director tenure, measured by the number of terms served on the board. On average, a director serves a term of 3 years. This variable contains six categories: 1 (i.e., 3 years or less), 2, 3, 4, 5, and more than 5 (i.e., more than 15 years) terms.
Work_Exp	Fraction of directors who have past experience in the focal firm's industry (more than 1 year)
Board_Exp	Fraction of directors who have past experience in being on board in any firm (more than 1 year)
Board_Size	The number of directors on the board.
Control and other variables	
Size	Natural logarithm of Total Assets.
CEO_Share	CEO's shareholding in firm's equity
Indep	Fraction of independent directors on board.
After_app	Fraction of board members who have been appointed after current CEO.
Duality	Dummy variable; equals 1 if CEO is Chairman.
Comp	Natural logarithm of board compensation
AV_Tenure	Average directors' tenure on the board

DATA AND SAMPLE

Sample Selection

Financial and operational criteria

Russian public companies or companies which were public over more than 3 years in the period from 2009 to 2017 with market capitalization more than \$100 mm as of 31.12.2017 or as of the last year end before delisting.

Disclosure criteria

Companies with available annual reports over the period from 2009 to 2017.

Data sources

Firms' annual reports, Bloomberg, Capital IQ, Thomson Reuter Eikon databases.

Resulting sample consists of 100 firms with 848 firm-year observations

DATA AND SAMPLE

Variables

Board_Size is the number of directors on the board;

Age_D is age diversity : Blau's index of diversity among 5 groups: 40 and younger, 40–49, 50–59, 60–69, 70 years old and older;

Tenure_D is directors' tenure diversity: Blau's index of diversity among 6 groups: 1 (i.e., 3 years or less), 2, 3, 4, 5, and more than 5 (i.e., more than 15 years) terms;

Degree reports fraction of directors who hold PhD degree or higher;

MBA reports the fraction of directors who hold MBA degree;

Work_Exp reflects board experience in industry - percentage of directors who have worked in focal **firm's industry** for more than 1 year;

Board_Exp is the fraction of directors who have had an experience of being directors for more than 1 year;

AV_Tenure is average directors' tenure within a board;

Size reflects size of a firm – $\ln(\text{assets})$ - natural logarithm of firm's total assets;

ROA -net income divided by total assets;

ROE - net income divided by book value of equity;

TQ is Tobin's Q, market capitalization plus total liabilities plus preferred equity plus minority interest divided by total assets.

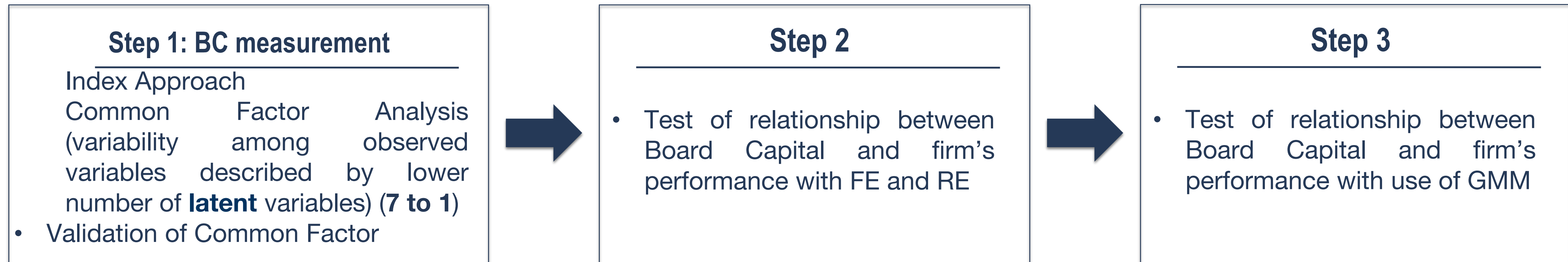
Descriptive Statistics

Variable	Obs.	Mean	Std. Dev.	Min	Max
Board_size	848	9.663	2.482	5.000	18.000
Age_D	848	0.622	0.110	0.000	0.800
Tenure_D	848	0.399	0.242	0.000	0.791
Degree	848	0.267	0.206	0.000	0.909
MBA	848	0.108	0.128	0.000	0.636
Work_Exp	848	0.914	0.121	0.250	1.000
Board_Exp	848	0.873	0.160	0.091	1.000
AV_Tenure	848	3.613	2.708	0.000	17.500
Size	828	11.901	1.443	8.345	16.719
ROA	809	4.903	10.356	-78.457	53.963
ROE	731	11.399	26.979	-160.700	190.676
TQ	792	0.093	0.454	-1.079	1.915

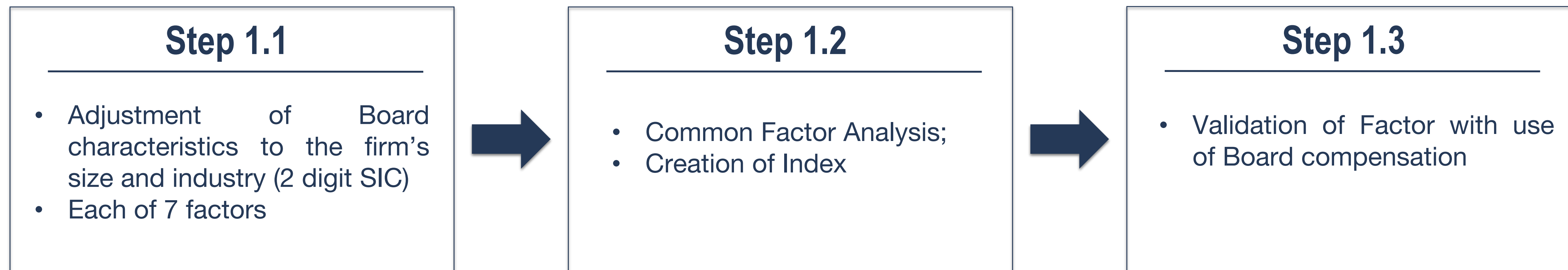
- **Low** tenure diversity
- **Medium** level of Age diversity

METHODOLOGY (1/4)

Empirical part is presented by following scheme



Board Capital assessment scheme



METHODOLOGY (2/4)

Results of Common Factor Analysis

Eigenvalues					
Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6
1.028	0.291	0.046	0.022	-0.070	-0.166
Summary for Factor Analysis					
Variable	Loading on First Factor	Correlation with First Factor	Communality		
Age_D	0.277	0.131	0.146		
Tenure_D	0.506	0.263	0.259		
Degree	0.265	0.134	0.204		
MBA	0.008	0.001	0.041		
Work_Exp	0.500	0.270	0.332		
Board_Exp	0.613	0.367	0.384		
Summary Statistics of First Factor					
Mean	Std. Dev.	Min	Max		
0.000	0.722	-2.925	1.279		

- First factor satisfies Kaiser criteria (\geq or equal to 1) **very good factor!**
- Board size has negative loading on factor due to negative correlation with other board characteristics, thus was excluded from factor analysis;
- Communality – portion of variance of each variable **explained by common factor (BC)**
- Based on existing literature, we can conclude that communality of our variables are at acceptable level;
- Derived Factor 1 presents firm's **Board Capital** (Board Capital Factor further)

METHODOLOGY (3/4)

Results of Index Approach

Summary Statistics of Board Capital Index

Mean	Std. Dev.	Min	Max
3.182	0.532	1.360	4.543

- Board Capital Index is calculated in a simple manner by summing up board characteristics (excluding Board Size)

Validation of Board Capital Factor

$$\ln(\text{Comp})_{i,t+1} = \alpha + \beta_1 \text{BCF(BCI)}_{i,t} + \beta_2 \text{Board Size}_{i,t} + \beta_3 \text{AV Tenure}_{i,t} + \beta_4 \text{Size}_{i,t+1} + \beta_5 \text{ROA}_{i,t+1} + \beta_6 \ln(\text{Tobin's } Q)_{i,t+1} + \text{IND}_{FE} + \text{YR}_{FE} + \varepsilon_{it}$$

- **Board Capital Factor has no significant relationship with Board compensation (results presented in Appendix);**
- According the Bank of Russia survey of its CG Guidelines: the disclosure of compensation policies of TMT and its link to performance AND Board's evaluation and their efficiency, their roles in company's development and the identification of zones for improvements are among the least followed principles
- We are looking for a new method of **Factor analysis validation**
- But today we **use Board Capital Index** in further analysis

RESULTS 1



Result for GMM Estimation (dynamic panel data)

	ROA(t+1)	ROE(t+1)	Tobin's Q
L. Dependent	0.613*** (0.187)	0.345** (0.160)	0.565*** (0.149)
BCI	0.130** (0.065)	0.183* (0.106)	0.170* (0.092)
Board_size	-0.017 (0.012)	-0.003 (0.025)	-0.003 (0.019)
AV_Tenure	-0.004 (0.010)	-0.010 (0.015)	-0.007 (0.018)
Size(t+1) (For Model 3 Size(t))	0.007 (0.028)	-0.018 (0.048)	0.035 (0.061)
Constant	-0.306 (0.438)	-0.224 (0.631)	-0.820 (0.715)
Year FE	Yes	Yes	Yes
Industry FE	No	No	No
Observations	621	621	689
Number of id	100	100	99
Arellano-Bond test for AR(1)	0.009	0.011	0.003
Arellano-Bond test for AR(2)	0.657	0.075	0.268
Sargan test	0.958	0.882	0.058
Hansen test	0.896	0.772	0.571

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

- We address **endogeneity problem** by including in the models **lag** of dependent variable; dependent = the first lag of corresponding metric
- For operating performance on average interquartile change in board capital (**from lower to upper quartile**) increases future return on assets by **9.5%** and return on equity by 13%;
- For the same **increase in board capital we can observe 12% increase** in current market valuation

Change in BCI = 3.580327 -
2.851546 = 0.728781
multiplied by regression coefficient 0.130
Will be = **0.00947313** OR **9.5%** increase ROA

METHODOLOGY (4/4)

CEO Power Index

- CEO Power Index is calculated in a simple manner by summing up four characteristics:
 - CEO Share
 - CEO-duality;
 - Board independency;
 - Fraction of directors appointed after CEO
- In order to test H3, we use **interaction variable of Board Capital and CEO Power**

Summary Statistics of CEO Power Index

Mean	Std. Dev.	Min	Max
1.436	0.413	0.308	2.918

Main Models

$$ROA(ROE)_{i,t+1} = \alpha + \beta_1 BCI_{i,t} + \beta_2 Board\ Size_{i,t} + \beta_3 AV\ Tenure_{i,t} + \beta_4 Size_{i,t+1} + IND_{FE} + YR_{FE} + \varepsilon_{it}$$

$$\ln(Tobin's\ Q)_{i,t} = \alpha + \beta_1 BCI_{i,t} + \beta_2 Board\ Size_{i,t} + \beta_3 AV\ Tenure + \beta_4 Size_{i,t} + IND_{FE} + YR_{FE} + \varepsilon_{it}$$

RESULTS 2



Moderating Effect of CEO Power

	ROA(t+1)	ROE(t+1)	Tobin's Q
L.Dependent	0.581*** (0.162)	0.353** (0.151)	0.571*** (0.122)
BCI	0.314** (0.157)	0.077 (0.338)	-0.615 (0.417)
BCI×CP	-0.154* (0.090)	-0.064 (0.201)	0.545** (0.274)
CP	0.513* (0.294)	0.201 (0.681)	-1.683** (0.845)
Board_size	-0.015 (0.010)	-0.004 (0.028)	0.008 (0.023)
AV_Tenure	-0.001 (0.007)	0.006 (0.017)	-0.017 (0.019)
Size(t+1) (For Model 3 Size(t))	0.001 (0.024)	-0.076 (0.062)	0.004 (0.057)
Constant	-0.886 (0.641)	0.777 (1.564)	1.895 (1.513)
Year FE	Yes	Yes	Yes
Industry FE	No	No	No
Observations	617	617	685
Number of id	100	100	99
Arellano-Bond test for AR(1)	0.007	0.003	0.003
Arellano-Bond test for AR(2)	0.455	0.063	0.991
Sargan test	0.634	0.149	0.727
Hansen test	0.88	0.485	0.731

- The resulting effect of board capital on future ROA is **lower for the firm with powerful CEO** (is supported by **negative sign** of interaction variable);
- With including in the model interaction variable and CEO power index the impact of BCI becomes **insignificant**;
- **Only with powerful CEO** board capital seems to have **positive relationship with market valuation**;
- On the other side, presence of powerful executive on average has **negative impact** on market valuation
- The magnitude of CEO power impact on market valuation is quite high, suggesting that on average inter-quartile increase in CEO power results in decrease in market valuation by 87%

WHAT DO NEW EMPIRICAL RESULTS TELL US?

- Board Capital matters even on the market with relatively underdeveloped corporate governance traditions and “weak real power of board”
- Firstly, there is a **positive significant impact** of board capital on firm’s operating performance such that **interquartile change in board capital** (from lower to upper quartile) increases future ROA by 9.5% and ROE by 13%.
- Secondly, board capital is **positively** associated with firm’s **market valuation**. Results show that that interquartile change in board capital (from lower to upper quartile) increases Tobin’s Q by 12%.
- Thirdly, on Russian market we indeed observe **negative moderating effect of CEO power** on board capital – operating performance relationship.
- Despite negative attitude to influential CEO, investors believe that **boards with high level of Board Capital is able to offset the CEO**

BEST BOARD CAPITAL: EVIDENCE for SOLLERS (Russian automobile company)



❑ THE MAXIMUM VALUE OF BCI = 4,543 IS FOR THE BOARD OF SOLLERS (MISX: SVAV) in 2011

- ROA **2012** was 12% (max for Sollers within the period)
- Since 2009 to 2015 rr. BCI still was among the highest
- In 2016 **BCI dropped** to 3,14, and future **ROA in 2017 dropped to 2,32%**.
- **Negative ROA** in 2009 and 2014
- **Tobin Q** the relationship does not look straightforward

❑ THE COMPOSITION OF THE BOARD CAPITAL HAS CHANGED:

- 9 members of the board within the period
- The share of members with **degree dropped** from 0,66 to 0,33.
- The age became more **homogenous**
- The **board tenure** in this company also became more homogenous
- The share of members with **Board experience** (BOARD_EXP) dropped 2 times

On average for overall sample:

2009	BCI = 3,03
2010	BCI = 3,14
2011	BCI = 3,12
2012	BCI = 3,21
2013	BCI = 3,18
2014	BCI = 3,25
2015	BCI = 3,23
2016	BCI = 3,19
2017	BCI = 3,29

PRIORITIES & TRENDS

- **35%** of board members in Russia think that sustainability expertise **would benefit their board and company.**
- 63% of the respondents CLAIM that **investors devote the right** amount of attention to sustainability and CSR issues.
- 55% of directors claiming that investors are prioritising climate change
COMPARE: PwC's *Russian Boards Survey 2014*, **more than half of** directors (52%) believed that climate change is **NOT** important to their business.
- Listing a company in ESG indices improves a company's investment attractiveness? 23% of DIRECTORS think that it "definitely" does, while 40% claim that it "most likely" does:
- According to 2019 study, **only 37%** of investors **review** companies' responsibility and sustainability reports, while 75% of investors rely on third- party research or indexes
- Directors feel that investors are giving the appropriate level of focus to **gender diversity** (62%) and **corporate governance** (58%).

NEW ACTIONS

- 89% have taken actions to **integrate sustainability** into overall strategy
- 52% dedicate more time to **sustainability in the board meetings**
- **81% believe that NON-financial reporting improves investment attractiveness**
- 54% ALREADY REPORT ON SUSTAINABILITY ACTIVITIES
- 66% believe that corporate strategy can be aligned with sustainability developments

INSIDE THE BOARD ROOM

- ❑ Company responses to economic challenges often follow a short-term orientation.
- THE BOARDS that engage in **short-term** planning saw a **slight jump** to 12% (from 10% last year)
- ❑ 42% discussing strategy over **five-year** planning horizons, a **jump from** 29% in 2018
- ❑ BUT the percentage of boards that develop strategy on a **ten-year** planning horizon moved from 16% to a **negligible 6%** this year
- ❑ Regular self-evaluations - 45% boards, self-evaluations plus externally facilitated assessments - 17%, only externally facilitated 15%

CONFIDENCE IN THEIR EXECUTIVE TEAM

- In the last two years (2018 and 2019) :
 - a positive trend in the **growing level of trust** given to executive teams and their ability to execute strategy effectively.
- The share of boards who believe in their executive teams has **increased from 69% to 73%**

GUIDELINES of CG: SURVEY (2018 last)

- The percentage of boards already following the guidelines of 2014 have **increased**, but some corporations went thru **de-listing**
- The increase is higher in the LIST-1 , compared to 2015 the number of Boards **following 75% principles** of the guidelines increased by 40pp; in the LIST-2 – by 7 pp
- The number of boards following the principles at a rate lower than 50% **decreased 3 times**
- The disclosure of **compensation policies** of TMT and its link to performance AND **Board's evaluation** and their efficiency, their roles in company's development and the identification of zones for improvements are among the **least followed principles:**
 - **only 11% of boards followed this type of guidelines fully**

CEO POWER:

THE REQUIREMENTS FOR BOARD'S INDEPENDENCY are introduced in growing number of boards

- The chairman is independent director
- Or **lead independent director** is elected by the board to communicate their opinion to the Chairman
- The most important decisions are accepted by **qualified majority votes** in the board room

CHANGES IN PRACTICES DUE TO THE NOVELTY IN FEDERAL LAW ON JOINT STOCK COMPANIES (2018):

- To increase the role of boards: **APPOINTMENT and DISMISSAL OF CEO** are excluded from the competencies of shareholder's meetings
- The right of the Boards to create **themselves** committees to develop different issues
- The right of the Boards to find and to **offer the candidates** for Board's members in addition the the shareholder's meetings to develop effective succession policy and composition of the boards
- Risk- management systems must be introduced, in 2020 - **internal audit** systems, audit policies developed by the boards and **audit committees in the boards** become **obligatory**

CONCLUSIONS



WHAT SHOULD WE DO?

- Boards Capital measures to add to WICI ACTIVITIES
- Strengthen the measures of Board capital by the metrics for Board's networks
- Discuss KPIs to include into non-financial reports
- Discuss sector's impact on measures
- Study knowledge intensive firms compared to traditional
- Discuss the impact of business models on measures and KPIs



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APPENDICES



Results of Board Capital Factor Validation

	Model 1	Model 2
Board Capital	0.186 (0.114)	0.327* (0.197)
Board_size	0.080 (0.058)	0.079 (0.057)
AV_tenure	0.034 (0.047)	0.029 (0.051)
Size(t+1)	0.096 (0.136)	0.102 (0.135)
ROA(t+1)	-0.208 (0.784)	-0.223 (0.789)
Ln(Tobin's Q)(t+1)	0.318 (0.297)	0.309 (0.297)
Constant	7.924*** (2.088)	6.836*** (1.975)
Year FE	Yes	Yes
Industry FE	Yes	Yes
Observations	412	412
Chi_sq	159.2	164.35
Number of id	77	77

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

APPENDICES



Industry breakdown

Name	2-digit SIC code	Number of firms
Electric, Gas, & Sanitary Services	49	27
Primary Metal Industries	33	9
Transportation Equipment	37	7
Chemical & Allied Products	28	6
Petroleum & Coal Products	29	6
Food & Kindred Products	20	5
Communications	48	5
Metal, Mining	10	5
Oil & Gas Extraction	13	4
Transportation by Air	45	3
General Merchandise Stores	53	3
Coal Mining	12	3
Business Services	73	3
Water Transportation	44	2
Real Estate	65	2
Nonmetallic Minerals, Except Fuels	14	2
Pipelines, Except Natural Gas	46	1
Food Stores	54	1
Stone, Clay, & Glass Products	32	1
Furniture & Home furnishings Stores	57	1
Wholesale Trade – Durable Goods	50	1
Railroad Transportation	40	1
Miscellaneous Retail	59	1
Transportation Services	47	1

APPENDICES



Correlation matrix

	BCF	BCI	Board_size	Degree	Work_Exp	MBA	Age_D	Tenure_D	Board_Exp	CEO_power	AV_Tenure	ROA(t+1)	ROE(t+1)	Tobin's Q	Size
BCF	1														
BCI	0.9189*	1													
Board_size	-0.04	0.005	1												
Degree	0.352*	0.562*	0.192*	1											
Work_Exp	0.665*	0.465*	-0.118*	-0.037	1										
MBA	0.011	0.241*	-0.058	-0.025	-0.051	1									
Age_D	0.368*	0.414*	0.117*	0.224*	0.061	-0.027	1								
Tenure_D	0.673*	0.733*	-0.087*	0.212*	0.273*	0.02	0.132*	1							
Board_Exp	0.815*	0.659*	-0.045	0.152*	0.421*	0.062	0.175*	0.335*	1						
CP	-0.123*	-0.166*	-0.024	-0.115*	0.005	-0.081*	-0.096*	-0.123*	-0.092*	1					
AV_Tenure	0.602*	0.575*	-0.036	0.142*	0.324*	-0.074*	0.074*	0.720*	0.397*	0.021	1				
ROA(t+1)	0.043	-0.013	-0.069	-0.082*	0.027	-0.118*	0.118*	-0.001	0.056	0.126*	0.066	1			
ROE(t+1)	0.023	0.008	-0.059	-0.063	-0.023	-0.026	0.106*	0.031	0.025	0.023	0.055	0.611*	1		
Tobin's Q	0.04	0.032	-0.237*	-0.162*	0.004	0.161*	-0.026	0.068	0.098*	0.103*	0.064	0.244*	0.268*	1	
Size	0.300*	0.365*	0.329*	0.427*	-0.002	-0.081*	0.256*	0.234*	0.200*	-0.090*	0.146*	0.037	0.027	-0.156*	1

Note: * p<0.05