

Renewable Governance: Good for the Environment?

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New Research on Executive Compensation and on Sustainability
ECGI and Bar Ilan University
December 2019

- Institutional investors are increasingly concerned about firms' environmental sustainability choices.
- In the survey of Krueger, Sautner, and Starks (2019) institutional investors state that:
 - Environmental risks have **financial risks** for their portfolio firms and that these risks have **begun to materialize**.
 - Risk management/**engagement is important** to address these risks, and is more important than divestment.

- Why might outside investors have concerns that *insiders* choices regarding environmental performance won't be optimal?
 - insiders, when short-term oriented, will not invest enough today to mitigate future environmental risks – Benabou and Tirole (2010)
 - In theory, ownership should be enough, because of obtained control rights.
 - But, control rights are meaningful only when there is **effective governance**.
- Our **main questions**:
 1. Do governance mechanisms (G) drive firms' environmental performance (E)—that is, does G come before E?
 2. What specific aspects of governance provide the greatest impact?

We draw a distinction between 'Traditional' and 'Contemporary' Governance measures

First, explore traditional governance measures

1. Outside investors mostly or fully lack control rights when firms controlled by **family** or other blockholder
2. Measures of outsider control rights long emphasized in the literature
 - Example: Aggarwal et al. (2009) index. Note: such indices feature significant emphasis on director independence, which has limits if independent directors feel allegiance to insiders

We draw distinction between 'Traditional' and 'Contemporary' Governance measures

- Second, explore 'contemporary' governance measures that plausibly renew the mindset of the board. These have not been studied for E.
- *If there is a gap between insiders and outsiders on importance of concrete actions to address environmental risks, renewal may be key*
 1. Governance mechanisms that *refine the voting process* to nominate and elect investors' preferred directors. That is, move beyond independence, to investor voice.

Specifically focus on **majority voting rules**
 2. Governance mechanisms of *forced board renewal* from investor or social pressures.

Specifically focus on **female board representation**.

1. Framework

- When choosing to invest to improve E performance, Benabou and Tirole (2010) highlight two frictions that make the identity of the decision maker relevant for E performance:
 - Insider short-termism (career/comp. concerns, private benefits of control)
 - Non-pecuniary utility from environmental investments ('warm halo' effect; spend to do your part to fix negative externalities)
- Predictions:
 - Entrenched insiders will choose **higher** level of environmental performance than outsiders **only** if insiders have both negligible short-termism and place a higher value on the non-pecuniary benefits of E performance. $G \uparrow \Rightarrow E \downarrow$
 - In all other situations: $G \uparrow \Rightarrow E \uparrow$. Short-termism important. As can be non-pecuniary benefits.
 - Note: because of possible impact of differences in non-pecuniary benefits, cannot necessarily conclude increase in E NPV enhancing.

2. Environmental performance data

- Global firm-level environmental data from Thompson Reuters ASSET4 database. Broad coverage, with data since 2004.
 - ASSET4 analysts use firms' public disclosures (e.g., sustainability reports), public agency filings, and in-house investigations.
- We use the aggregated index that ASSET4 provides (z-scores).
 - Standardized to measure environmental performance relative to all other companies in a given year.
- We build our own measure based on the 70 line items for three environmental categories that ASSET4 reports.
 - We average these to build an equally-weighted environmental performance score.

Governance mechanisms

We start with, but don't focus on, a “Black Box” 38-item ASSET4 governance score (we modify it to exclude sustainability items they count as governance)

Traditional governance mechanisms that *are* a key focus:

- Blockholder control (most relevant for us: family blockholder)
- Indicator items as in Aggarwal et. al. (2009) that “have received the most attention in the academic literature and from observers.”
 - Board Independence, Audit Committee Independence, CEO-Chair Split, Absence of multiple voting stock classes, Board size >5 and <16, Board Structure has no staggered elections. It is an Index from 0-6.

Traditional governance mechanisms have limits. Contemporary mechanisms help to address.

- Traditional mechanisms rely in large part on independent directors
 - Independent directors often co-opted by insiders due to appointment process or other reasons (e.g. Coles, et. al. (2014))
- When there is a gap between outside investors and insiders on an issue, *renewing the mindset of the board*, may be needed.
 - Bebchuk and Hamdani (2017) suggest three mechanisms to refine voting process for directors
 - Nominating committees with independent directors, *majority voting*, enhanced proxy access.
 - Also, forced board turnover is a route to renewal
 - Term limits, age limits, *external pressures to increase female representation*

Mechanisms of board 'renewal' in our international sample

- Adoption of **majority voting** rules for director elections
 - Requires that a board member receives more than 50% of the votes cast (compared to a requirement to receive a plurality of votes cast).
 - Outside investors thus have more power to prevent insiders' candidates from joining the board.
 - Important governance variable (e.g., Cunat, Gine, Guadelupe, 2012; Ertimur, Ferri, Oesch, 2015, Doidge, Dyck, Mahmudi and Viranit, 2019).
- Pressure to increase **female board** representation
 - Forced board renewal coming from societal and investor pressure
 - New female board members likely not insiders (Ahern and Dittmar, 2012), thus more independent
 - Enhances skill sets of boards, including governance skills (Kim and Starks, 2016)

3. Empirical specification

- Is governance related to firms' environmental performance?
- Regression analysis of environmental performance on lagged measures of governance mechanisms, controlling for observables.

$$\text{Log}(\text{Score}_{it}) = \alpha + \beta X_{it-1} + \gamma' Y_{it-1} + \Lambda + \varepsilon_{it}$$

- Governance measures:
 - Traditional and Contemporary measures
- Controlling also for institutional ownership, firm characteristics, country, industry, and time.
- Standard errors are clustered at the country level.

Governance mechanisms and firms' environmental performance (Table 2, Panel A)

| | ASSET4 Environmental z-Scores t | | | | | |
|---------------------------------|-----------------------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Family t_{-1} | -0.098*** (-3.12) | -0.103*** (-3.30) | -0.097*** (-3.12) | -0.109*** (-3.57) | -0.112*** (-3.79) | -0.102*** (-3.29) |
| ASSET4 Governance t_{-1} | 0.815*** (6.00) | | | | | |
| Traditional Governance t_{-1} | | 0.033** (2.68) | | | | 0.026** (2.07) |
| Old or Stale Board t_{-1} | | | -0.080*** (-3.81) | | | |
| Majority Election t_{-1} | | | | 0.084*** (3.34) | | 0.072*** (2.77) |
| Female Director t_{-1} | | | | | 0.142*** (4.66) | 0.135*** (4.55) |
| Controls | Yes | Yes | Yes | Yes | Yes | Yes |
| Country Fixed Effects | Yes | Yes | Yes | Yes | Yes | Yes |
| Industry Fixed Effects | Yes | Yes | Yes | Yes | Yes | Yes |
| Year Fixed Effects | Yes | Yes | Yes | Yes | Yes | Yes |
| Obs | 20,531 | 20,531 | 17,435 | 20,531 | 20,531 | 20,531 |
| Adjusted R ² | 0.456 | 0.451 | 0.469 | 0.451 | 0.455 | 0.458 |

Economic significance

- **Family-controlled firms** associated with a **10% lower** score.
- **Trad. governance** assoc with a **3% greater** score
- **Majority election rule** assoc with a **7% greater** score.
- **Female director** assoc. with **14% greater** score.
- **Similar results** when using **equally-weighted E Score**

Natural to raise questions of causality

- Omitted variables that are correlated with both E performance and governance mechanisms. A potential concern. What we do:
 - Firm fixed effects regressions to control for time-invariant unobservables.
- Further Identification
 - In some countries in our sample, outside pressures forced adoption of either majority voting rules or female board representation.
 - Outside pressures plausibly disconnected from environmental pressures.
 - These quasi-exogenous shocks help us to identify the impact of governance on firms' environmental performance.
 - That is, we focus on firm changes when there is a push for improved governance that is exogenous to the firm (and unrelated to environmental performance). Still include firm fixed effects.

Firm fixed effects support causal interpretation (Table 3, Panel A)

| | ASSET4 Environmental z-Scores | | | | |
|------------------------|-------------------------------|-------------------|---------------------|--------------------|-------------------|
| | (1) | (2) | (3) | (4) | (5) |
| ASSET4 Governance | 0.166** (2.48) | | | | |
| Traditional Governance | | 0.014** (2.34) | | | |
| Old or Stale Board | | | -0.024** (-2.15) | | |
| Majority Election | | | | 0.048*** (3.14) | |
| Female Director | | | | | 0.030** (2.05) |
| Controls | Yes | Yes | Yes | Yes | Yes |
| Firm Fixed Effects | Yes | Yes | Yes | Yes | Yes |
| Year Fixed Effects | Yes | Yes | Yes | Yes | Yes |
| Obs | 20,196 | 16,099 | 6,169 | 9,947 | 7,739 |
| Adjusted R^2 | 0.856 | 0.857 | 0.864 | 0.825 | 0.834 |

Quasi-natural experiment: Shocks to majority election rules (Table 4, Panel A)

- Firm fixed effects focusing on specific time period when concerted exogenous push to increase governance: Canada: 2005/06 push from Canadian Coalition for Good Governance (CCGG) to adopt majority voting director elections (Doidge et al, 2019).
- Broad sample: 20+ percentage points increase in majority voting adoption in a single year.
- ‘Treated’ = 1 if firm adopted Majority Election rule during the ‘shock’ window

| | Single Country Experience | | Broad Sample Excl. Canada | | Broad Sample | |
|---|---------------------------|---------------------------|--|---------------------------|--|---------------------------|
| | ASSET4 E z-Scores | Equally-weighted E Scores | ASSET4 E z-Scores | Equally-weighted E Scores | ASSET4 E z-Scores | Equally-weighted E Scores |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Post Majority Election Adoption × Treated | 0.299** (2.34) | 0.236** (2.43) | 0.076* (1.80) | 0.059* (1.91) | 0.104** (2.58) | 0.085*** (2.82) |
| Controls | Yes | Yes | Yes | Yes | Yes | Yes |
| Firm Fixed Effects | Yes | Yes | Yes | Yes | Yes | Yes |
| Year Fixed Effects | Yes | Yes | Yes | Yes | Yes | Yes |
| Obs | 197 | 197 | 1,057 | 1,057 | 1,254 | 1,254 |
| Adjusted R^2 | 0.812 | 0.855 | 0.814 | 0.852 | 0.820 | 0.865 |
| Countries in Sample | Canada | | Australia, Austria, Belgium, Denmark, Ireland, Italy, Spain, Switzerland, UK | | Australia, Austria, Belgium, Canada, Denmark, Ireland, Italy, Spain, Switzerland, UK | |

Quasi-natural experiment: Female board representation (Table 5, Panel B)

- UK: 2011 Women on Boards review by Lord Davies who recommended that FTSE100 firms should have 25% female board representation within 4 years.
- Broad sample: 10+ percentage points increase in firms that have at least one female on the board; outside investor push or regulation verified.
- ‘Treated’ = 1 if firm added one or more female directors during the ‘shock’ window

| | Single Country Experience | | Broad Sample Excl. the UK | | Broad Sample | |
|--|---------------------------|---------------------------|---|---------------------------|---|---------------------------|
| | ASSET4 E z-Scores | Equally-weighted E Scores | ASSET4 E z-Scores | Equally-weighted E Scores | ASSET4 E z-Scores | Equally-weighted E Scores |
| | (1) | (2) | (5) | (6) | (3) | (4) |
| Post Female Board Representation × Treated | 0.082* (1.89) | 0.049** (2.32) | 0.085* (2.27) | 0.055* (2.09) | 0.080*** (3.77) | 0.050** (3.21) |
| Controls | Yes | Yes | Yes | Yes | Yes | Yes |
| Firm Fixed Effects | Yes | Yes | Yes | Yes | Yes | Yes |
| Year Fixed Effects | Yes | Yes | Yes | Yes | Yes | Yes |
| Obs | 936 | 936 | 1,374 | 1,374 | 2,310 | 2,310 |
| Adjusted R^2 | 0.879 | 0.935 | 0.919 | 0.952 | 0.910 | 0.949 |
| Countries in Sample | UK | | Australia, Austria, Germany, Greece, Italy, Malaysia, Portugal, Switzerland | | Australia, Austria, Germany, Greece, Italy, Malaysia, Portugal, Switzerland, UK | |

4. Do we find an impact of governance where E issues are most salient?: Countries with poorer E performance

| | ASSET4 Environmental z-Scores | | | | | |
|-------------------------|-------------------------------------|--------------------------------------|------------------------------------|-------------------------------------|--------------------------------------|------------------------------|
| | Low Country-level ASSET4 E z-Scores | High Country-level ASSET4 E z-Scores | Low Environmental Protection Index | High Environmental Protection Index | Outside Continental Europe Countries | Continental Europe Countries |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Family | -0.138** (-2.78) | -0.065 (-1.72) | -0.117*** (-3.01) | -0.103* (-2.02) | -0.131*** (-4.06) | -0.066 (-1.49) |
| Traditional Governance | 0.039** (2.55) | 0.013 (0.96) | 0.032* (2.01) | 0.028 (1.65) | 0.026 (1.65) | 0.021 (1.10) |
| Majority Election | 0.075* (1.83) | 0.067** (2.28) | 0.087*** (2.90) | 0.033 (1.57) | 0.086*** (2.88) | 0.028 (0.81) |
| Female Director | 0.124*** (2.88) | 0.141*** (5.90) | 0.154*** (4.58) | 0.115* (2.21) | 0.143*** (4.25) | 0.059 (1.43) |
| Controls | Yes | Yes | Yes | Yes | Yes | Yes |
| Country Fixed Effects | Yes | Yes | Yes | Yes | Yes | Yes |
| Industry Fixed Effects | Yes | Yes | Yes | Yes | Yes | Yes |
| Year Fixed Effects | Yes | Yes | Yes | Yes | Yes | Yes |
| Obs | 9,296 | 11,234 | 14,087 | 6,444 | 15,384 | 5,147 |
| Adjusted R ² | 0.419 | 0.392 | 0.455 | 0.441 | 0.448 | 0.452 |

In Family-Controlled Firms?

| | ASSET4 Environmental z-Scores (1) | Equally-weighted Environmental Scores (2) |
|------------------------|---|---|
| Family | | |
| Traditional Governance | 0.007 (0.39) | 0.004 (0.32) |
| Majority Election | 0.037 (0.80) | 0.023 (0.65) |
| Female Director | 0.124*** (3.08) | 0.105*** (3.22) |
| Widely Held/Other | | |
| Traditional Governance | 0.031** (2.08) | 0.024** (2.09) |
| Majority Election | 0.083*** (2.84) | 0.070*** (2.82) |
| Female Director | 0.138*** (4.15) | 0.106*** (4.63) |
| Controls | Yes | Yes |
| Country Fixed Effects | Yes | Yes |
| Industry Fixed Effects | Yes | Yes |
| Year Fixed Effects | Yes | Yes |
| Obs | 20,531 | 20,531 |
| Adjusted R^2 | 0.458 | 0.535 |

Takeaways

- As expected, **No relation** between traditional governance measures and E scores
- **Board renewal through female director** positively related to E performance

In 'Dirty' Industries?

| SIC Divisions | ASSET4 Environmental z-Scores | | ASSET4 Environmental z-Scores | |
|------------------------|-------------------------------|---------------------|-------------------------------|----------------------|
| | 'Dirty' ABFGI | 'Clean' CDEH | 'Dirty' ABI | 'Clean' CDEFGH |
| | (1) | (2) | (5) | (6) |
| Family | -0.091** (-2.28) | -0.107** (-2.67) | -0.073 (-1.49) | -0.109*** (-2.84) |
| Traditional Governance | 0.028 (1.53) | 0.022* (1.79) | 0.024 (1.26) | 0.023* (1.78) |
| Majority Election | 0.090** (2.05) | 0.082*** (3.03) | 0.078 (1.46) | 0.082*** (2.78) |
| Female Director | 0.133*** (4.20) | 0.128*** (3.66) | 0.141*** (5.81) | 0.124*** (3.64) |
| Controls | Yes | Yes | Yes | Yes |
| Country Fixed Effects | Yes | Yes | Yes | Yes |
| Industry Fixed Effects | Yes | Yes | Yes | Yes |
| Year Fixed Effects | Yes | Yes | Yes | Yes |
| Obs | 6,278 | 14,253 | 4,532 | 15,999 |
| Adjusted R^2 | 0.512 | 0.414 | 0.542 | 0.419 |

5. Female Effect is Very Strong.

Is it Characteristics Associated with Gender?, or Gender?

- Why it might be Characteristics
 - Ahern and Dittmar (2012) find that, compared to existing male directors, new female directors have significantly less CEO experience, are younger, and are more highly educated.
 - After controlling for these characteristics, there is no longer a robust relationship between female board membership and performance.
 - When we compare newly-hired female directors to newly-hired male directors, female directors have less CEO experience, are more educated, and are younger.
 - Such differences could drive the reported results.
- Why it might be Gender
 - Behavioral economics evidence finds females have stronger other-regarding preferences [e.g., Andreoni and Vesterlund, 2001; Adams and Funk, 2012; Thaler, 2016; Cronqvist and Yu, 2017]

5. Female Director Additional Tests

| | ASSET4 Environmental z-Scores | | Equally-weighted Environmental Scores | |
|--------------------------|-------------------------------|----------------------|---------------------------------------|----------------------|
| | (1) | (2) | (3) | (4) |
| Family | -0.103*** (-3.36) | -0.102*** (-3.30) | -0.078*** (-3.16) | -0.077*** (-3.11) |
| Traditional Governance | 0.027** (2.14) | 0.025* (2.02) | 0.020** (2.12) | 0.019* (1.96) |
| Majority Election | 0.072*** (2.77) | 0.076*** (2.92) | 0.060*** (2.76) | 0.062*** (2.92) |
| One Female Director | 0.110*** (3.86) | | 0.084*** (4.08) | |
| Two+ Female Directors | 0.194*** (5.01) | | 0.156*** (5.87) | |
| Percent Female Directors | | 0.552*** (3.54) | | 0.452*** (4.13) |
| Controls | Yes | Yes | Yes | Yes |
| Country Fixed Effects | Yes | Yes | Yes | Yes |
| Industry Fixed Effects | Yes | Yes | Yes | Yes |
| Year Fixed Effects | Yes | Yes | Yes | Yes |
| Obs | 20,531 | 20,531 | 20,531 | 20,531 |
| Adjusted R ² | 0.459 | 0.457 | 0.537 | 0.534 |

It is unlikely that some unobservable (to us) shock to the firm happens at the same time that every additional female board member is appointed. Thus, if we find a robust relationship for additional female board members, it is more likely the impact is related to gender and not something else.

Female Director Additional Tests – Include Board Characteristics

| | ASSET4 Environmental z-Scores | | Female Characteristics | CEO Experience | Higher Education |
|------------------|-------------------------------|--------------------|------------------------|----------------------|----------------------|
| | (1) | (2) | | | |
| Female Director | | 0.145*** (5.31) | Below Median Group | 0.123*** (4.80) | 0.129*** (4.71) |
| CEO Experience | 0.216*** (3.15) | 0.220*** (3.58) | Above Median Group | 0.085*** (4.50) | 0.067*** (3.78) |
| Higher Education | 0.128* (1.83) | 0.090 (1.31) | Family | -0.097*** (-3.05) | -0.097*** (-2.97) |
| MBA | -0.029 (-0.22) | -0.056 (-0.44) | Traditional Governance | 0.034** (2.59) | 0.034** (2.56) |
| Age | -0.142 (-1.20) | -0.081 (-0.65) | Majority Election | 0.061** (2.37) | 0.062** (2.39) |
| Tenure | 0.005 (1.14) | 0.004 (1.18) | | | |
| Same Name | -0.003 (-0.85) | 0.001 (0.28) | | | |

Takeaways

- *Female result robust*
- *Not driven by differences in measured characteristics*
- What drives it?: innate preference for other-regarding behavior, unmeasured differences, impact on groupthink.

Model 1, full controls but no gov variables: CEO experience and Higher Ed improve E. Model 2 has all gov variables and board characteristics, Female still strong effect. Right hand table portion: new female director added that has low CEO experience or low Higher Ed: still get strong positive effect

6. Conclusions: G → E

- Roadmap - investors with a focus on environmental responsibility will be more effective if they don't focus on ESG, or even E alone. Governance is fundamental to E performance.
- All governance mechanisms have an impact, with contemporary governance mechanisms of board renewal having the strongest impact. (limits to independence alone)
- Female board representation particularly strong impact, not based on differences in measured characteristics. Impacts family firms.

- Implications for research on E and performance. E captures past G.
- Results consistent with a view that firms improve E because investors are asking for it.
- The theoretical framework suggests this push comes from investors constraining insider short-termism and/or from investors putting a high value on non-pecuniary benefits from E investments.

▪ THANK YOU

Summary Stats

| Variable | Mean | Median |
|------------------------------|-------|--------|
| Family | 0.225 | 0.000 |
| ASSET4 Governance | 0.559 | 0.567 |
| Traditional Governance | 3.652 | 4.000 |
| Board Independence | 0.466 | 0.000 |
| Board Size | 0.840 | 1.000 |
| CEO-Chairman Separation | 0.655 | 1.000 |
| Board Structure | 0.331 | 0.000 |
| Audit Committee Independence | 0.615 | 1.000 |
| Stock Classes | 0.744 | 1.000 |
| Old or Stale Board | 0.193 | 0.000 |
| Majority Election | 0.548 | 1.000 |
| Female Director | 0.596 | 1.000 |
| One Female Director | 0.311 | 0.000 |
| Two+ Female Directors | 0.286 | 0.000 |
| Percent Female Directors | 0.103 | 0.091 |