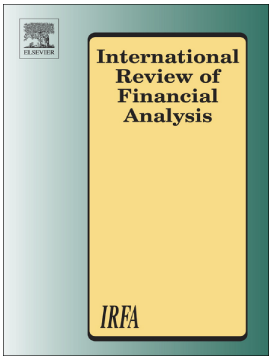


# Sovereign credit ratings during the COVID-19 pandemic

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# Disclosure by Firms under Voting Pressure

Xianjue Wang[1]

## Abstract

Firms with a negative ISS recommendation see significant reduction in shareholder support for their proposals and are likely to face pressure to increase support in upcoming meetings. We find that firms facing voting pressure are significantly more likely to disclose positive content in discretionary sections of Form 8-K that result in higher abnormal stock returns in the months prior to the shareholder meeting. The 8-Ks with good news in discretionary sections, filed prior to the shareholder meeting, are associated with higher support for management proposals in upcoming meetings. Finally, this selective filing of 8-Ks with good news is higher when investors are distracted and lower for family firms. The results point to understudied effect of ISS voting recommendation on firm's selective disclosure.



Declarations of interest: None

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# Sovereign credit ratings during the COVID-19 pandemic

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This version 22 July 2021

## Abstract

Using 603 sovereign rating actions by the three leading global rating agencies between January 2020 and March 2021, this paper shows that the severity of sovereign ratings actions is not directly affected by the intensity of the COVID-19 health crisis (proxied by case and mortality rates) but through a mechanism of its negative economic repercussions such as the economic outlook of a country and governments' response to the health crisis. Contrary to expectations, credit rating agencies pursued mostly a business-as-usual approach and reviewed sovereign ratings when they were due for regulatory purposes rather than in response to the rapid developments of the pandemic. Despite their limited reaction to the ongoing pandemic, sovereign rating news from S&P and Moody's still conveyed price-relevant information to the bond markets.

*Keywords:* COVID-19, Economic outlook, Sovereign credit ratings, Rating calendars

*JEL classification:* F3, F5, G2, H1

Declarations of interest: none.

**Highlights**

- This paper examines whether sovereign rating actions by three major rating agencies are affected by the intensity of the COVID-19 health crisis.
- Findings show that sovereign ratings respond to the changes in the economic repercussions caused by the pandemic (economic outlook, government's response to crisis) and not directly by the intensity of the health crisis (proxied by case and mortality rates).
- Contrary to expectations credit rating agencies applied a mostly business-as-usual approach and reviewed sovereign ratings only when they were scheduled for regulatory purposes scheduled ahead of the pandemic.
- Despite credit rating agencies' lack of timeliness, sovereign rating news from S&P and Moody's appear to convey price-relevant information to the bond markets.

# Sovereign credit ratings during the COVID-19 pandemic

This version: 22 July 2021

## Abstract

Using 603 sovereign rating actions by the three leading global rating agencies between January 2020 and March 2021, this paper shows that the severity of sovereign ratings actions is not directly affected by the intensity of the COVID-19 health crisis (proxied by case and mortality rates) but through a mechanism of its negative economic repercussions such as the economic outlook of a country and governments' response to the health crisis. Contrary to expectations, credit rating agencies pursued mostly a business-as-usual approach and reviewed sovereign ratings when they were due for regulatory purposes rather than in response to the rapid developments of the pandemic. Despite their limited reaction to the ongoing pandemic, sovereign rating news from S&P and Moody's still conveyed price-relevant information to the bond markets.

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## 1. Introduction

Media reports of a novel coronavirus first emerged in the international press in January 2020. By March 2020, the World Health Organization (WHO) declared COVID-19 a global pandemic, and by October 2020, the International Monetary Fund (IMF) (2020a) forecast a global economic contraction of 4.4% for the year 2020. For perspective, the Great Financial Crisis saw a global contraction of 0.1% (IMF, 2020b). Fiscal responses to the economic crisis have driven public sector leverage to an all-time high, rendering sovereigns more vulnerable to future shocks, especially if and when interest rates rise from their historic depths.[2] The unusually brisk and synchronised deterioration of economic and fiscal fundamentals across the globe provides an unprecedented opportunity to assess the reactions of credit rating agencies (CRAs) to sudden shocks. CRAs are relied upon as leading sources of credit risk information and act as gatekeepers to global debt markets (Kedia et al., 2014). Analysing ratings actions from January 2020 to March 2021, we are the first to empirically investigate the extent to which CRAs delivered on their remit to inform market participants of changing in creditworthiness in a timely, transparent and independent manner.

We analyse rating actions of the three biggest CRAs (S&P Global Ratings, Moody's Investors Service, and Fitch Ratings), which together represent a market share of more than 90%.[3] Between January 2020 and March 2021, three CRAs issued a total of 99 sovereign rating downgrades on 48 countries, affecting 35% of their rated sovereign portfolio. We find that compared to previous crises, CRAs have reacted with considerable caution. For example, S&P with a coverage of 121 countries, issued 20 (31) downgrades on 19 (26) countries in the six (14) months since February 2020, amounting to 15.7 (21.5)% of its sovereign portfolio. For comparison, in the six months following the collapse of Lehman Brothers in September 2008, S&P downgraded 31 sovereigns, or 25% of its (then smaller) sovereign portfolio (Kraemer, 2020).[4]

Why should the severe contraction during COVID-19 induce fewer downgrades than the comparatively mild contraction during the great financial crisis? One potential consideration is the business-as-usual

[2] According to the IMF's World Economic Outlook report in April 2021, general government debt for advanced economies stood at 123% of GDP, versus the 90% average during the 2000-2019 period. For emerging and developing countries, the increase of public debt was also pronounced (64% of GDP versus the pre-pandemic average of 43%).

[3] According to the Securities and Exchange Commission (SEC) annual report on Nationally Recognized Statistical Rating Organizations (NRSROs) 2020, the cumulative market share of three leading CRAs in sovereign ratings is 98.7%, whereby S&P leads the market with 54.3% followed by Moody's with 33.4% and Fitch with 11.0% (SEC, 2020).

[4] Between January 2020 and March 2021, if we include rated sovereigns excluded from this study for lack of data, we observe 105 downgrades on 54 countries issued by three CRAs.

scheduling of ratings reviews by CRAs. The frequency of sovereign ratings reviews is subject to regulation. For example, for sovereign followed by rating analysts based in the EU,[5] CRAs are required to publicly announce ratings reviews on two to three dates in the forthcoming calendar year.[6] Regulations permit CRAs to conduct reviews ahead of schedule when circumstances require (EC, 2013). A reasonable assessment would be that the pandemic constitutes a sufficiently large change in circumstances to merit early ratings reviews from CRAs. CRAs were effectively free to review any rating at any time following the outbreak of the pandemic.

Motivated by these issues we analyse if and how the pandemic influenced global sovereign ratings. To examine whether the severity of the health crisis (case and mortality rates) affected sovereign ratings actions, we compile a novel panel dataset of rating actions for 137 countries issued by three leading CRAs between 30 January 2020 and 31 March 2021. The effect of COVID-19 is measured by the number of confirmed cases per million published by Johns Hopkins database. We establish the starting date of our sample (30 January 2020) as the day when WHO announced COVID-19 a *"Public Health Emergency of International Concern".* Our identification strategy controls for the fact that the pandemic did not hit all countries at the same time. Namely, the country enters the sample only after the first confirmed case has been recorded. We regress rating actions against the number of confirmed cases per million, a measure of CRA's timeliness based on the time elapsed since the preceding public ratings review, and country-level controls.

Our results show that negative sovereign rating actions are not directly triggered by the depth of the heath crisis, e.g. the infection cases or mortality rates, but through a mechanism of its negative economic repercussions. Also, government response to the pandemic has unintended consequences for sovereign ratings. More decisive measures adopted by countries lead to higher deterioration in creditworthiness.

Our key finding is that rather than proactively issuing early ratings reviews, CRAs in many cases kept coasting in a business-as-usual mode, reviewing ratings close to their scheduled dates set before the pandemic. For each month that the preceding rating review aged, the probability of a downgrade increased by 0.14% and that of a negative outlook or watch by 0.13%. If sovereign credit committees were strictly held on an analytical as-needed basis, the time that has elapsed since the previous review should not have any impact on the likelihood of a rating action. The fact that the coefficient is positive and highly significant (at 1% level) provides evidence that CRAs did in many instances simply wait until

[5] Or a jurisdiction endorsed by the EU as equivalent for regulatory purposes.

[6] The regulation in other jurisdictions typically requires at least a yearly publication of a ratings update following a credit committee having deliberated on each sovereign.

a review was due before lowering a rating or outlook. This is an important and surprising finding. In the midst of a disrupting pandemic, which clearly constituted an external unanticipated shock, the case for an accelerated review would have been exceptionally easy to make, both internally as well as externally. Regulators would not have been able to object to the assessment that previous assumptions going into sovereign ratings had been overtaken by events and a fresh look would have been called for. Our finding reveals important and original insights compared with the previous crisis of similar systemic nature. During the sovereign debt crisis in the early 2010s, CRAs were criticised for what some considered to be excessive downgrades on sovereign ratings of Euro area countries. The downgrades have been caused by a common external shock affecting all Euro area sovereigns to varying degrees.[7] Similarly in 2020, almost the entirety of rated sovereigns has been affected by the external shock of the pandemic. Had the CRAs reacted in 2020 in a similar fashion as they did a decade earlier, under what were substantially milder circumstances, we would have obtained insignificant coefficients on the time elapsed since the last review.

Although it is disappointing from the perspective of rating users, we show that market participants have been mostly oblivious to the CRAs' business-as-usual working mode. Namely, they were unable to realise the timing of rating actions according to the CRAs' regulatory review calendar and/or to adjust the spreads accordingly. It follows that rating actions in the pandemic are still treated as 'news'. Sovereign spreads increase by an average 71.06 basis points in the [0; +1] window of a negative outlook announcement compared with the benchmark case of no announcement. Spreads are strongly responsive to S&P's rating actions, whilst moderate if the actions are from Moody's. Similar to episodes of market turbulence in the past (Afonso et al., 2014), negative sovereign rating news give important information value to the capital markets. Additionally, we confirm that there is no relationship between case rates and the bond spreads, which substantiates our earlier findings concerning the muted effects of depth of the pandemic on sovereign risk. On the other hand, we find evidence of an attenuating effect of government measures aiming at containing the virus and bond spreads. Contrary to CRAs' pessimistic view, the government's actions aiming at controlling the virus are perceived by the markets as positive signals.

Our study makes original contributions to the rating literature on three fronts. First and foremost, this is the first empirical study on the effects of COVID-19 pandemic on sovereign credit ratings. The literature on the economic effects of COVID-19 pandemic has been burgeoning since 2020, whereby researchers

[7] For example, S&P placed all sixteen Euro area sovereigns under negative watch on December 5, 2011. A few weeks later, on January 13, 2012, the CRA lowered ratings on nine Euro area sovereigns on one day and affirmed the remaining seven. See S&P Global Ratings: "Standard & Poor's Takes Various Rating Actions on 16 Eurozone Sovereign Governments", January 13, 2012.

concentrate on investigating the financial market reactions (Azimli, 2020; Baker et al., 2020), volatility of markets (Lyócsa et al., 2020; Salisu and Vinh, 2020; Zhang and Hamori, 2021) and behavioural aspects of COVID-19 (Binder 2020; Fetzer et al., 2020). However, there is no published study on the response of CRAs to this global pandemic.

Second, we are the first study to highlight a difference in the way CRAs react to the ongoing crisis in comparison to the past crises by observing timing of rating committees. We observe shift from elevating review efforts to stagnant business-as-usual mode. We attribute this change to the CRA regulation in place. This suggests that the tighter regulation since the financial crisis has led to less timely rating behaviour by the CRAs.

Third, we provide the first insights into the information value of sovereign rating news for the debt markets under the influence of the pandemic.

The rest of the paper is structured as follows: Section 2 briefly discusses related literature. Section 3 focuses on methodology employed in this study. Section 4 explains data and summary statistics. Section 5 presents the empirical findings and robustness tests, while Section 6 concludes.

## 2. Literature review

### *2.1. Background of the CRA industry and critiques of the paradigm*

Credit ratings are forward looking opinions on the probability of default. They provide a common language of credit risk enabling broad comparability of default risk across issuers, industries, geographies and time.[8] Sovereign credit ratings assess the creditworthiness of a country, at the same time affecting the long-term investment and lending decisions across nations. Sovereign downgrades have strong implications for financial markets and institutions alike as they affect the cost of credit available to sovereigns but also other asset classes due to the imposed ceiling effect (Borensztein et al., 2013; Alsakka et al., 2014).

Most ratings are solicited by the issuer, whereby they request the service and pay for the rating. However, there are also a number of unsolicited ratings which are "initiated by parties other than the issuer or its agents" (S&P, 2018; p. 43). Despite their prevalence in the market, unsolicited ratings remain one of the

[8] For a description of the ratings business in general terms see for examples: Moody's "Understanding Moody's Credit Ratings", April 2020; Fitch Ratings "Rating Definitions", April 2021; S&P "S&P Global Rating Definitions" Jan 2021.

most controversial aspects of the industry[9] (Fulghieri et al., 2014). For example, bank and corporate ratings literature finds that issuers who do not pay for ratings on average receive lower assessment (Poon, 2003; Bannier et al., 2010). The opposite is found in the sovereign ratings market (Gibert, 2019). Following changes in sovereign solicitation disclosure rules, Klusak et al. (2017) find banks domiciled in sovereigns which switched their status to unsolicited rating receive a penalty in a form of lower ratings. Regulators and investors are interested in this feature as both types of ratings are allowed for regulatory purposes.

The rating industry is a regulated business. Part of the regulatory requirement is that methodologies are publicly accessible and that sovereign ratings are reviewed at least once per year, or six-monthly for sovereign that fall under EU-regulation (EC, 2013). The rating decisions are taken by committee process, where committee members apply the appropriate methodology and vote on the final decision of the rating, and/or the outlook on the rating. Because CRAs aim to "rate through the cycle" they find themselves in a constant dilemma between reaching stability versus accuracy in their ratings (Altman and Rijken, 2004). Generally, CRAs intend to give ratings which are stable over time and not influenced by temporary fluctuations due to the nature of the business cycle. One of the key challenges for CRAs is therefore the identification of "fundamental" changes in variables that are expected to have an impact on creditworthiness. To help with their efforts[10] CRAs apply additional credit warnings such as outlook or watch to show possible direction and timing in their rating (Hamilton and Cantor, 2004).

In the recent years CRAs have been put in the spotlight and criticised for their lax ratings and inability to predict the 2007 sub-prime crisis (Stolper, 2009). In a similar vein CRAs were blamed for failing to recognise the 1997 East Asian crisis and aggravating it even further by excessive sovereign downgrades (Mora, 2006). On the other hand, CRAs also stand accused of worsening the 2010 European debt crisis by downgrading ratings of Eurozone sovereigns too far and too fast (Alsakka and ap Gwilym, 2013). Although the inertia during times of sudden shocks might be driven by the underlying business models of CRAs it is also partly related to regulatory negligence on the side of regulators and market players. Users of ratings often over-relied on ratings without making their in-house assessments (House of Commons, 2012). In addition, regulators kept a blind eye for a very long time (BOE, 2011). Finally, the ratings

[9] Other issues relating to the business model are a lack of competition and conflict of interest problem induced by issuer-pays model, which in turn might trigger rating shopping and rating inflation (Becker and Milbourn, 2011). Moreover, CRAs often release contradicting ratings. Finally, there is a lead-lag relationship in sovereign credit rating announcements whereby S&P leads Moody's in downgrades and Fitch in both upgrades and downgrades (Alsakka and ap Gwilym, 2010).

[10] While regulators, and bond issuers appreciate rating stability, market participants such as investors of hedge funds or traders prefer ratings which are timely and accurate (Cantor and Mann, 2007).

became strongly imbedded into regulations and this assured investors about their reliability and encouraged herd behaviour.

### *2.2. COVID-19 related literature*

There has been an inflow of literature relating to the impact of COVID-19 on the global economy and financial markets. Using the epidemiology model, Eichenbaum et al. (2020) study the interaction between the pandemic and economic decisions and reveal a trade-off between restrictive economic interventions (lockdown) and costs of the spread of the disease. Following, a growing survey literature links how the COVID-19 outbreak affected consumer beliefs, macroeconomic expectations, anxieties and preferences (Binder 2020; Fetzer et al., 2020). Several studies collate how the COVID-19 pandemic affected global economic and financial affairs in comparison with the previous health (e.g., SARS, MERS, Ebola, Zika) and financial crises (Izzeldin et al., 2021; Correia et al., 2020; Goodell, 2020). Treating COVID-19 as a financial crisis rather than an epidemic[11] Izzeldin et al. (2021) apply sectoral analysis to G7 economies and find that the most affected sectors are Health Care and Consumer services with Telecommunications and Technology the least. Moreover, authors find the response of financial markets to COVID-19 resembles that of previous financial crises rather than other pandemics.[12] Wang et al. (2021) estimate the effect of previous pandemics on innovation outputs and find that effects vary between countries and sectors. Sharif et al. (2020) suggest that compared to the Great Depression and the Global Financial Crisis, the COVID-19 crisis is unique, inter alia, in the way it produces a (figurative and literal) contagion effect. Akhtaruzzaman et al. (2020) find that the spillover can be mainly attributed to financial institutions.

The contagion effects of the pandemic resulted in a search for safe haven assets including gold (Ji et al., 2020) and cryptocurrency (Goodell and Goutte, 2020). While the former group yields consistent results, there are some disagreements about 'hedging risk' using latter assets (Conlon and McGee 2020; Corbet et al., 2020; Mnif et al., 2020).

A series of short papers on stock market reactions to the pandemic emerged recently (Azimli, 2020; Baker et al., 2020; Cepoi, 2020). Baker et al. (2020) find the effect of COVID-19 on the US stock market is different from shocks induced by earlier infectious diseases such as SARS or Ebola. Others go a step further and forecast the volatility of stock returns using various predictors. Lyócsa et al. (2020), Salisu

[11] Others consider COVID-19 as a black swan event (e.g., Yarovaya et al., 2020).

[12] When comparing the COVID-19 pandemic to a 2008 Global Financial Crisis, authors find that the pandemic introduced greater uncertainty which makes it comparable to the Great Crash in 1929 and Black Monday Event in 1987.

and Vinh (2020) study the relevance of health news collected from Google searches in the predictability of stock returns. Using volatility indexes such as EPU and VIX, Wang et al. (2020) conclude that the latter is most useful in predicting stock market volatility during the pandemic. Zhang and Hamori (2021) analyze the return and volatility spillover between the COVID-19 pandemic, crude oil market and stock market and find that return (volatility) spillover occurs in the short (long) term.

The only studies remotely connected to our research are Balajee et al. (2020), Kargar et al. (2020) and Acharya and Steffen (2020). Balajee et al. (2020) in their study of 95 sovereigns between January and April 2020, find that sovereign ratings are amongst the most important determinants of fiscal stimulus packages undertaken by governments to tackle the pandemic. Ratings affect not only the amounts raised but also the timing of the stimulus packages being introduced. Authors document that on average, governments with low ratings issued 0.3 % lower fiscal packages and delayed their response by 1.7 days. On the other hand, Kargar et al. (2020) and Acharya and Steffen (2020) investigate the liquidity of US corporate bonds in the wake of Federal Reserve interventions. Kargar et al. (2020) with a sample spanning between January and June 2020 (without access to the latest rating data for all the bonds) find that at the climax of the crisis liquidity conditions depreciated because dealers were unwilling to use their own balance sheets to absorb corporate debt. After Fed facilities such as 'purchase of corporate debt' were announced, the situation reversed. Acharya and Steffen (2020) show how differently the stock market evaluated firms depending on their liquidity. The authors find only firms in the category between A to AAA issued bonds following Fed's quantitative easing. In contrast, the lowest end of the investment grade firms (category BBB-) rushed to convert their commitments into cash. This "dash for cash" behaviour was observed amongst half of the converted credit line commitments and characterised firms with the potential of becoming 'fallen angels'[13] in the future.

## 3. Data and methodology

### *3.1. Data sampling*

To study factors affecting CRAs' assessments of sovereign creditworthiness in the context of an ongoing health crisis, we collect rating history along with press releases related to rating changes, outlook, credit watch revisions, and rating affirmations by S&P, Moody's, and Fitch during the period 30 January 2020 to 31 March 2021. Data for Moody's is available via their website whereas ratings for S&P and Fitch are collected from subscribed rating data services (S&P Ratings Direct, Fitch Connect). Rating outlooks and

[13] This term refers to issuers whose investment grade rating (BBB- and above) is replaced by speculative rating status (BB+ and below).

credit watches express CRAs' directional view of risks and mitigants which have not yet been sufficient to prompt an immediate rating action but may induce rating changes in the near and intermediate term.[14] Meanwhile, rating affirmations communicate CRAs' judgements that outstanding ratings continue to be appropriately positioned and are not directly affected by publicly visible credit developments (Moody's, 2020).

Credit rating alphabetic symbols are translated into a 22-point numerical scale, with 22 corresponding to the highest (AAA), and 1 (SD) the lowest credit quality (Appendix A.1). To enter our sample, we require that sovereigns have a long-term foreign currency issuer credit rating issued by at least one of the three CRAs. Countries must have had their 2020 and 2021 economic forecasts in IMF's World Economic Outlook Reports released in October 2019, April 2020 and October 2020. Each country enters the sample when the first COVID-19 case occurs after 30 January 2020.

We calculate the daily changes of ratings, outlooks and watches and form a dataset consisting of all the changes on the first day of each month and any subsequent changes within each month. With this method our sample includes observations of zero changes in ratings (no rating actions) and actual rating actions including changes in rating levels (upgrades or downgrades), revisions of outlooks and watches, and confirmations of ratings. Downgrades to default and upgrades from default are excluded and treated as rating withdrawals and new rating assignments respectively. This is a reflection of the fact that "default" is not a rating but a description of a fact, i.e., a missed payment or a distressed debt exchange.

Our COVID-19 related variables are sourced by the Johns Hopkins University Coronavirus Resources Centre's database. To track the governments' reactions to the outbreak, we use the Oxford Coronavirus Government Response Tracker OxCGRT for which data is accessible from Hale et al. (2021). To account for responsiveness of CRAs via timing of rating committees we use sovereign rating histories found on Moody's website, S&P Ratings Direct, and Fitch Connect. Finally, we obtain the three IMF's World Economic Outlook reports from the IMF official website.

Our final sample encompasses 5,171 observations from 137 sovereigns spanning the period from 30 January 2020 to 31 March 2021. Out of 137 sovereigns, 118 are rated by S&P, 131 by Moody's, and 112 by Fitch.

[14] With watches (outlooks) CRAs indicate the direction into which the rating might be moved during the next three months (year or two) respectively.

### *3.2. Model specification*

We study factors affecting CRAs' assessments of sovereign creditworthiness in the context of an ongoing health crisis, which has been declared as a public health emergency of international concern by WHO on 30 January 2020 (WHO, 2020).

To capture the effect of COVID-19 on sovereign rating actions we estimate an ordered probit model. This model is established in the ratings literature whereby it enables to capture ordinal nature of dependent variable(s) (Becker and Milbourn, 2011). Following Williams et al. (2013), we calculate marginal effects (MEs) to estimate the economic significance of variables that are statistically significant for the sovereign rating actions.

When specifying our econometric model, we select several indicators published in CRAs' sovereign rating methodologies (Fitch, 2020; S&P, 2017), recent literature (Salisu and Vinh, 2020; Sharif et al., 2020), as well as economic intuition which can suggest how ratings would move in the context of the pandemic. We look at seven variables including countries' economic outlooks under pressure from COVID-19, the severity of the COVID-19 crisis, governments' responses to the health crisis, the rating surveillance schedule (the time elapsed since the previous public rating pronouncement), and a dummy variable for March 2020-April 2020 period which exhibits the highest uncertainty and fear for the pandemic.[15] The summary statistics and definitions of variables appear in Table 2. We regress sovereign rating actions *(Downaction)* on *CAB_Outlook*, *NetLB_Outlook*, *GDP_Outlook*, *CaseRates*, *GovtResponse*, *Count*, *ShockandAwe* followed by *Region* and *CRA* dummies.[16]

$$Downaction^{*}_{i,j,t} = \beta_1 CAB\_Outlook_{i,t} + \beta_2 NetLB\_Outlook_{i,t} + \beta_3 GDP\_Outlook_{i,t} + \beta_4 CaseRates_{i,t} + \beta_5 GovtResponse_{i,t} + \beta_6 Count_{i,j,t} + \beta_7 ShockandAwe_t + \lambda Region + \theta CRA + \varepsilon_{i,j,t} \quad (1)$$

Where the dependent variable *Downaction**$_{i,j,t}$ is a latent variable linked to the observed ordinal daily rating intensity *Downaction*$_{i,j,t}$ of a sovereign *i* by CRA *j* at date *t* computed by the following model:

[15] Dummy takes value of one during period March-April 2020 and zero otherwise.

[16] We also estimate the results using random effects model similar to Ashraf et al. (2020). The results are mainly consistent and are available on request.

$$Downaction_{i,j,t} = \begin{bmatrix} 0\ (affirmation, pos\ action\ or\ no\ review) & if\ Downaction^{*}_{i,j,t} \le \mu_1 \\ 1\ (neg\ outlook, neg\ watch) & if\ \mu_1 < Downaction^{*}_{i,j,t} \le \mu_2 \\ 2\ (downgrade) & if\ \mu_2 < Downaction^{*}_{i,j,t} \end{bmatrix}$$

where the cut-off points $\mu_m$ $(\mu_1 < \mu_2)$ and coefficients $\beta, \lambda,$ and $\theta$ are parameters to be estimated by Maximum likelihood (ML).

$Downaction_{i,j,t}$ takes the value of 2 for downgrades, 1 for negative outlooks or negative credit watches, and 0 otherwise (i.e., positive rating revisions, rating affirmations, or no rating reviews).[17] As described by S&P (2014; 2005) negative outlooks and credit watch episodes are often a precursor of future rating actions in the indicated direction. Therefore, we consider them in our analysis alongside actual downgrades. Accordingly, we weigh outlook and watch actions less heavily than the actual downgrades. Henceforth outlook refers to both outlook and credit watch actions.

$CAB\_Outlook_{i,t}$ , $NetLB\_Outlook_{i,t}$ and $GDP\_Outlook_{i,t}$ are changes in the IMF's forecasts of current account balance (% of GDP), net government lending/borrowing (% of GDP) and GDP growth which capture countries' economic outlook changes as the result of the COVID-19 health crisis. Forecasts for each variable for 2020 and 2021 are obtained from three IMF World Economic Outlook reports published in October 2019 (which did not take into account the impact of COVID-19), April 2020 and October 2020 (which did). For each of these three economic indicators (and in each report) we obtain the average forecast of 2020 and 2021 for each country. We then calculate the change of the average forecast in a report compared to that from the previous report. The IMF lowered the unweighted country average forecast for 2020/2021 of current account balance, net government lending/borrowing and GDP growth by 0.83%, 2.74% and 2.06%, respectively (Table 2, Panel I). Therefore, it is reasonable to assume that a deeper downward revision of economic growth forecast in 2020 would coincide with a higher likelihood of a sovereign's rating being lowered. We expect the coefficients on *CAB_Outlook, NetLB_Outlook* and *GDP_Outlook* to be significant with a negative sign.

$CaseRates_{i,t}$ is the daily cumulative number of confirmed COVID-19 cases per million people for country *i* at time *t*. It is our main variable depicting the direct effect of the pandemic's severity following recent literature (Ashraf et al., 2020; Baig et al., 2020; Fetzer et al., 2020; Hoang et al., 2020; Sharif et al.,

[17] During our sample period, there were just ten rating upgrades and 56 positive outlook/watch revisions across all three CRAs. Therefore, we merge positive rating actions with confirmations and non-actions into one category.

2020).[18] We expect a positive sign for *CaseRates* coefficient implying the more severe the pandemic, the higher likelihood of a country facing negative rating revisions.

$GovtResponse_{i,t}$ is an indicator of the ability of governments to effectively manage external shocks (such as a financial crisis or a health emergency), which is an important consideration of institutional strength in sovereign methodologies (Fitch, 2020; S&P 2017). The index is reported daily and tracks different series of policies including closures and containment (school closures; workplace closures; cancelling public events, restrictions on gatherings, closures of public transport, stay at home requirements, international travel controls); economic measures (income support and debt/contract relief for households); and health measures (public information campaigns, testing policy, and contact tracing). The index takes values between 0 and 100, with 100 indicating the most comprehensive government responses to COVID-19. Accounting for substantial unprecedented stimuli packages often in a form of "whatever it takes strategy"[19] is an important consideration when creditworthiness of countries is considered, since strong measures can be a burden on economic activity and public finances. Our choice of an aggregate measure of governments' actions is supported by Izzeldin et al. (2021) who state that the COVID-19 crisis has not only been affected by the economic stimuli, other measures such as containment rules, travel restrictions, test and trace also played an important role. We expect a positive sign on the *GovtResponse* coefficient implying the stronger the government response to COVID-19, the higher likelihood of the sovereign being downgraded.

$Count_{i,j,t}$ measures the number of months elapsed since the last published ratings review for a sovereign. This variable identifies whether rating committees were convened at a date just in time to satisfy regulatory requirements or whether a committee was held earlier to respond to shifting fundamentals in a timely manner. If CRAs bring sovereign credits to a committee review exclusively based on need and urgency, rather than on historically derived review dates, coefficient on this variable should show little or no significance. In a sudden and sharp external shock like the COVID-19 pandemic, it should simply not matter how much time has elapsed since the last rating review: if fundamentals suddenly change, the rating needs to be reviewed immediately. If on the other hand *Count* is positive and significant, it would imply that CRAs wait to release the new rating until the next rating scheduled in the calendar irrespective of the need of urgency caused by the pandemic.

[18] We have also estimated our model using mortality rates, and results remain mainly unchanged (See Appendix B and C). The literature suggests case rates offer advantages over the measure of mortality rates. For example, Ashraf et al. (2020) find that the stock market reacts stronger to the number of confirmed cases than to a number of deceased.

[19] For example, the Fed dropped interest rates and issued support packages. The Bank of England similarly provided funds directly to business sectors (Izzeldin et al., 2021).

*ShockandAwe*$_t$ is a binary variable which takes a value one if the observation falls into March 2020 and April 2020, 0 otherwise. The period marks the height of the first wave when the virus spreads exponentially on a global scale. It presents a high level of fear and uncertainty to the CRAs, regulators and financial markets concerning the lasting damage caused to the economies. We predict that sovereign ratings are most vulnerable to downgrades during this most uncertain period, hence the coefficient of *ShockandAwe* is expected to be positive and significant.

IMF *Region* dummies are added to control for the average time-invariant region heterogeneity. The IMF classifies countries into advanced economies (AEs) and five emerging and developing regions (EMDEs, i.e., Emerging & Developing Asia (ED ASIA), Emerging & Developing Europe (ED EUR), Latin America & Caribbean (LAC), Middle East & Central Asia (ME&CA), and Sub-Saharan Africa (SSA)). The economies in emerging and developing countries are less resilient to adverse shocks, while the quality of health care systems and social benefits are less adequate in developing countries than in developed countries. Hence negative revisions for these sovereigns could be anticipated. On the other hand, the economic shock caused by the pandemic was more severe for advanced than for developing countries (see Table 3), which usually hold a rating closer to the top of the scale. This would indicate that if the increase in default risk goes up for these nations, it would lead to more downgrades at the top.

*CRA* dummies ensure that our results are not driven by the differences in average ratings by

the three CRAs.

First, we estimate Eq. (1) using pooled sample containing rating revisions by all the three CRAs to establish the rating industry' general behaviour during the current health crisis. This enables us to exploit differences in the case rates across different CRAs for the same issuer at the same time. Furthermore, we can identify the systematic effect of the case rates on rating actions by disentangling them from the country effects (Fracassi et al., 2016). For instance, it could be possible that the case rates merely reflect a well-designed health system operating in the well-functioning economy.[20]

Secondly, we estimate regressions using individual CRA sub-samples to examine rating agencies' individual reaction to the pandemic. Although this approach has limitations, it is a common practice in the rating literature (Williams et al., 2013). Therefore, we estimate Eq. (2):

[20] It is established that healthcare performance is strongly dependent on the strength of the economy. See OECD Observer:
https://oecdobserver.org/news/archivestory.php/aid/1241/Health_and_the_economy:_A_vital_relationship.html

$$Downaction^{*}_{i,t} = \beta_1 CAB\_Outlook_{i,t} + \beta_2 NetLB\_Outlook_{i,t} + \beta_3 GDP\_Outlook_{i,t} + \beta_4 CaseRates_{i,t} + \beta_5 GovtResponse_{i,t} + \beta_6 Count_{i,t} + \beta_7 ShockandAwe_t + \lambda Region + \varepsilon_{i,t} \quad (2)$$

Subscripts *i*, *t* stand for countries and months. $Downaction^{*}_{i,t}$ is a latent variable linked to the observed ordinal daily rating intensity $Downaction_{i,t}$ of a sovereign i at date t by one of the three CRAs. The rest of the variables are identified in Eq. (1).

## 4. Summary statistics

### *4.1. Full sample*

Table 1 shows the distribution of credit rating events in our four samples: pooled, S&P, Moody's and Fitch. We also divide the events by IMF regions (See Section 3.1).[21] The pooled sample of three CRAs contains 5,171 observations for 137 sovereigns (Table 1, Panel I, Columns 2 and 3). We identify 603 sovereign rating events which include 99 downgrades and 121 negative rating outlooks and credit watches with negative implications (Panel I, Columns 6, 6, and 5 respectively). Individually the number of sovereigns receiving negative rating reviews of S&P and Fitch accounts for approximately 47.46% and 64.29% of their sovereign ratings portfolio respectively (Panel II and IV, Column 10). Surprisingly Fitch leads in all negative revisions with 40 downgrades and 47 negative outlook revisions (Panel IV, Columns 6 and 5). S&P follows with 31 downgrades and 41 negative/watch revisions (Panel II, Columns 6 and 5). Moody's appears the least active amongst the three CRAs. They negatively reviewed ratings of only 48 sovereigns (around 36.04% their sovereign rating portfolio) including 28 downgrades and 33 negative rating outlooks/credit watches (Panel III, Columns 7, 10, 6, and 5).

Table 2 depicts the variable definitions and summary statistics of our key variables in four samples (Panel I-IV). The mean and standard deviation of *Downaction* are the largest in Fitch sub-sample (mean=0.08, sd=0.35; Table 2, Panel IV, Column 6), followed by S&P (mean=0.06, sd=0.30, Panel II) and Moody's (mean=0.05, sd=0.28; Panel III). *CAB_Outlook, NetLB_Outlook, GDP_Outlook* and *CaseRates* are winsorised per sub-sample at the top and bottom 1% to prevent outliers from distorting our analyses. All three macroeconomic indicators including current account balance, net government lending/borrowing and GDP growth experience reduction in (average) forecasts of 2020 and 2021 across three IMF's WEO

[21] Additionally, for list of negative rating reviews per country see Appendix A.2.

reports. The number of confirmed cases per million stands at the average 9,087 (Panel I, Column 6), with the standard deviation of 16,235 implying a great diversity across countries. There is also a heterogeneity in the responses of governments to the pandemic manifested in a wide range between 0 and 89.69 with the average of 55.53 points and standard deviation of 16.86 points (Panel I, Columns 6 and 7).

On average there was a gap of approximately eight months between rating committees by any of the three CRAs (mean *Count**=7.81, Table 2, Panel I, Column 6). Both S&P and Fitch reviewed their sovereign ratings within six months of their previous review dates which is in line with the regulatory requirement (mean *SP_count**=5.88 months, mean *Fitch_count**=6.37 months; Panels II and IV respectively). Meanwhile, Moody's took much longer to reconsider their ratings (mean *Moody's_count** = 14.79 months) (Panel III).

### *4.2. Regional differences*

Table 3 shows a regional breakdown of all independent variables. The number of confirmed cases per million is most severe in the Emerging and Developing Europe (ED EUR) (Table 3, Panel I, Column 7). Advanced economies (AEs), Latin America & Caribbean (LAC), and Middle East & Central Asia (ME&CA) also record large numbers of case rates while Emerging and Developing Asia (ED ASIA) has the lowest rate of COVID-19 infections. Notwithstanding the large variation in the depth of the heath crisis across regions, there is little discrepancy in the average government response index since it just hovers around 55.53 points.

Table 3 also reveals an interesting fact that Moody's, and S&P to a lesser extent, is slower in taking actions on advanced economies (AEs). According to a regional breakdown of *Count** (excluding non-event days), it takes 22.91 (6.24) months since the most recent review date for Moody's (S&P) to announce a rating action, which is longer than the overall average duration of 14.79 (5.88) months across all countries. This is surprising because the AEs were predicted to be hit harder by the pandemic, which is manifested in their net government lending/borrowing forecast being deducted by 3.61%, compared to the global average reduction of 2.74% (Table 3, Panel I, Column 5).

## 5. Empirical results

### *5.1. Pooled results*

Table 4 presents the results of Eq. (1) using a pooled sample of S&P, Moody's and Fitch. We report specifications 1-3 where the control variables are added sequentially. In the most parsimonious Spec. (1) we include *CaseRates*, *GovtResponse*, *Count* and *ShockandAwe*. This simple model allows us to see the

direction of the relationship between COVID-19 case rates and the sovereign rating actions. Moreover, in Spec. (2) we include *CAB_Outlook*, *NetLB_Outlook* and *GDP_Outlook* which control for the changes in the economic outlook that might be driving the sovereign ratings. Finally, Spec. (3) and our baseline result henceforth, includes the regional dummies controlling for the possibility of regional heterogeneity highlighted in Section 4.2. In columns 5-7 of Table 4 we calculate the marginal effects for the variables with statistically significant coefficients obtained in Spec. (3).[22]

We find an unexpected impact of COVID-19 severity, measured by the number of cases per million people, on sovereign rating actions. The coefficient on *CaseRates* is significant at 5% level with a negative sign in Spec. (1), suggesting the more COVID-19 cases are confirmed per million people, the less likelihood of a negative sovereign rating action. However, *CaseRates* becomes insignificant after we control the model for macroeconomic fundamentals and region fixed effects. It implies that there is little evidence for a causal relationship between the spread of the virus and a sovereign rating action. One possible explanation could be that the CRAs hold the view that the surge in infections will ultimately be a temporary phenomenon. The philosophy of rating "through the cycle", in this case a pandemic cycle, would then call for ratings stability (Altman and Rijken, 2004).

Contrary to *CaseRates*, the degree to which governments respond to the COVID-19 health crisis exerts a strong influence on CRAs' sovereign rating decisions. Countries which employed stronger COVID-19 measures face higher likelihood of adverse rating actions. Coefficient on *GovtResponse* (which is scaled from 1 to 100) has a positive sign and is highly significant at the 1% level across all model specifications. One point increase in the government response index raises the likelihood of a negative outlook and that of a downgrade by approximately 0.03% (Marginal effects, Spec. (3)). Strong COVID-19 measures require a significant amount of financial support which might have immediate and long-term consequences for economic prospects, thus, damaging the sovereign's intermediate and long-term creditworthiness. This finding is somewhat counterintuitive as countries which better weathered the COVID-19 crisis should be better off at least in the long run. As suggested by Izzeldin et al. (2021) those who introduced the rescue packages sooner and more thoroughly overcame the COVID-19 crisis better. The nature of credit ratings is different however as they present the horizons between three to five years into the future.

[22] Additionally, we check the robustness of our baseline results from the pooled sample using the COVID-19 driven daily cumulative death toll as percentage of the population (*MortalityRates*) and find consistent results. The results are presented in Appendix B.

It is surprising that in the face of an unprecedented crisis, CRAs seem to be largely operating in a business-as-usual mode. The *Count* variable, which measures the time elapsed since the last published sovereign rating review, is significant at the 1% level and with a positive sign in all specifications. With each additional month that the preceding rating review ages, the probability of a downgrade (negative outlook) increases by 0.14% (0.13%) respectively (Marginal effects, Spec. (3)). This result reveals that sovereign ratings are not always reviewed based on the needs and urgency caused by the pandemic observed in the changes of market fundamentals. In contrast, the decision to bring a sovereign rating to a committee seems to be also significantly driven by CRAs regulatory historic review dates and rating schedules. This is especially worrying as there is no obligation to wait until the next possible review date. CRAs can call a committee on any sovereign and change its rating at any time if they can make the argument that a fundamental change to the credit outlook has occurred (EC, 2013).

Consistent with our expectation, there is strong evidence that negative sovereign rating actions are more likely during the first wave of the pandemic (March 2020- April 2020). Specifically, our *ShockandAwe* variable is significant at the 1% level with positive sign across all of the model specifications. Rating downgrades (negative outlooks) were 4.77% (3.96%) more likely to occur in the peak of the first wave than at other times. During that period, maximum uncertainty prevailed on how long the pandemic would last and how much human and economic damage it might have caused.

As anticipated, the coefficient on *GDP_Outlook* has a negative sign indicating that a sharper downward growth revision is associated with a higher likelihood of an adverse rating revision. We detect that growth revision is a strongly statistically significant (at 1% level) determinant of sovereign rating changes in both Spec (2) and (3). Each additional percentage point reduction in *GDP_Outlook* increases the likelihood of a rating downgrade by 0.49%, and that of a negative outlook by 0.40% (Marginal effects, Spec. (3)). Moreover, once controlling for the full set of regional dummies (Spec. (3)), *NetLB_Outlook* presents negative and statistically significant sign (at 5% level) suggesting deeper downward revision in net government lending to borrowing coincides with a higher likelihood of a sovereign's rating being lowered.

The sensitivity of sovereign ratings to the pandemic does vary across the geographic regions. The pooled results reveal favourable rating effects for advanced economies (AEs) and adverse effects for Sub-Saharan Africa (SSA) and Latin America & Caribbean (LAC). Being an AE sovereign increases the chance of successfully escaping a negative rating action (downgrade or negative outlook) between January 2020 and March 2021 by 2.66% (Marginal effects, Table 4). On the other hand, less developed nations in SSA and LAC are more likely to receive a downgrade, by 2.16% and 1.41% respectively, than

the countries in the benchmark Middle East and Central Asia (ME&CA). These results are not surprising given significant downward growth revisions of these regions (See Table 3, Panel I).

There are two possible explanations for this rating resilience against negative rating actions for advance economies (AEs). One explanation could be that more prosperous and sophisticated economies have more resources to better absorb shocks without lasting damage to their creditworthiness. This includes their superior ability to mobilise fiscal and monetary support packages to cushion shocks in the short term. This is consistent with an empirical observation that higher ratings have historically been less volatile than lower rated categories (Kraemer and Gunter, 2020). For instance, 73% of S&P's AAA-rated sovereigns will still be rated AAA ten years later. This number will be half (33% and 38%) for sovereigns rated in the BB or B categories respectively.

The alternative explanation is that CRAs might present positive bias toward sovereigns of advanced economies. Some CRAs may still recall the political backlash that followed when they had lowered many AE ratings during the Euro area debt crisis (or, in the case of S&P, the downgrade of the US). In some instances, costly lawsuits in AE courts have been a consequence of downgrades (FT, 2015). A significant tightening of rating regulations is also believed to have been a consequence of what policymakers may have considered excessive AE downgrades (De Haan and Amtenbrink, 2012). The impact on business and operations may subconsciously have lingered in analysts' minds when making decisions on AE ratings, developing a subconscious status-quo bias. Also, CRAs have been told by the EU regulator to avoid quick-fire downgrades during the pandemic in fear of worsening the situation (Reuters, 2020).

### *5.2. Individual CRAs results*

Table 5 presents results from Eq. (2) for each CRA sub-sample. Although our baseline result concerning the effects of macroeconomic variables on sovereign rating actions continue to hold, there is a heterogeneity across the three CRAs concerning the importance of each of the three macroeconomic variables. We find significant coefficients with negative signs on *CAB_Outlook* and *GDP_Outlook* in the sample of S&P's ratings (Spec. (2)). However, they turn insignificant after controlling for region fixed effects (Spec. (3)). In the case of Moody's, *GDP_Outlook* and *NetLB_Outlook* are negative and significant whilst *CAB_Outlook* is insignificant (Spec. (3)). Finally, in the case of Fitch, *GDP_Outlook* is strongly significant with the predicted negative sign but *CAB_Outlook* is weakly significant with a positive sign (Spec. (3)). According to Afonso et al. (2011), the effect of current account balance on sovereign ratings is uncertain. Our obtained result for Fitch indicates that current account deficit is reflective of an accumulation of capital inflows, which fuels growth and improves sovereign

creditworthiness. Therefore, deterioration in the *CAB_Outlook* will reduce the likelihood of a negative rating action.

*CaseRates* is insignificant for S&P and Moody's, which is consistent with the baseline results. However, it is weakly significant at the 10% level with a negative sign for Fitch in all model specifications. One possible explanation for the unexpected negative sign on *CaseRates* is that not all countries record COVID-19 cases reliably. The testing and detection strategy, capacity and effectiveness differ across countries. For example, the COVID-19 positivity rate (i.e., the number of positive results out of total tests) demonstrates that countries' testing adequacy differs significantly.[23] Countries with very high infection rates such as Mexico typically test people who are developing severe symptoms and seeking medical attention (Agren, 2020). Meanwhile, Singapore, Korea and other low-positivity-rate countries extensively test close contacts (and even minor contacts) of COVID-19 cases, vulnerable groups, and incoming travellers (Lee and Lee, 2020).

*GovtResponse* is only significant in the Fitch model. One point higher index in *GovtResponse*, on average, reduces the chance of avoiding an adverse rating action by 0.13%, raises the higher likelihood of a negative outlook by 0.06%, and increases the probability of a downgrade by 0.07% (Spec. (3), Table 5, Panel II).

*Count* is positive and highly significant at 1% level in all model specifications for S&P and Fitch. Coefficient is also significant at 5% level for Moody's sub-sample in Spec. (3). This suggests that instead of organising a rating committee based on the needs and urgency reflecting the fundamental changes during the time of crisis, all the three global CRAs wait to review the ratings at the next pre-scheduled event. Notably the marginal effects of *Count* reveal that the business-as-usual mode is more evident in the case of S&P and Fitch than in the case of Moody's.

Consistent with the pool sample's regression in Table 4, we find similar evidence that negative sovereign rating actions are more likely at the height of the first wave due to the uncertainty surrounding the pandemic. *ShockandAwe* variable is significant at 1% level with positive sign in all the three sub-samples and all model specifications.[24]

Once again CRAs' reaction to the pandemic varies across the geographic regions. We find that less developed countries in the Sub-Saharan Africa (SSA) are more likely to get a downgrade from S&P and

[23] See the positivity rate comparison per country at: https://coronavirus.jhu.edu/testing/international-comparison

[24] The only exception is Spec. (2) for Moody's, where the coefficient is significant at 5% level.

Moody's than the countries in the benchmark Middle East and Central Asia (ME&CA). This effect is significant at the 5% level. In the case of Moody's, we also find weak evidence that negative sovereign rating actions during the pandemic are more likely to occur to countries from Latin America & Caribbean (LAC). The positive bias to countries of advanced economies (AEs) is prevalent only in the case of S&P and Moody's. The coefficients on AEs dummy variable are negative and significant at the 5% and 1% level respectively. Moody's is 1.46% less likely to give a negative outlook, and 1.23% less willing to downgrade sovereigns from advanced economies. The corresponding values in the sample of S&P's ratings are 1.16% less downgrades and 1.45% less negative outlooks.[25]

### *5.3. The business-as-usual approach: a market perspective*

In this section, we examine empirically the reactions of three global CRAs to the ongoing pandemic from the perspective of financial market participants. Despite the rapidly changing circumstances of the pandemic, global CRAs have largely continued in a business-as-usual mode instead of elevating the review procedures to provide the timely updates of sovereign creditworthiness to the market participants. In other words, when scheduling sovereign rating committees, the CRAs, even in times of an exceptional crisis, still seem to be driven to a significant extent by the regulatory requirement to bring sovereigns to committee in predetermined intervals. An interesting question that emerges from this issue is whether financial markets are capable of detecting the CRAs' behavioural pattern. If so, this information should be incorporated into the movement of the financial asset prices.

Prior to the onset of the pandemic, CRAs have mostly adhered to that minimal requirement, reviewing and releasing sovereign ratings in roughly yearly intervals (or six-monthly for EU-regulated sovereign credits). We hypothesise that the closer CRAs are to their annual/bi-annual rating committee, the more likely sovereign credit spreads are to change if bond investors realise that CRAs are to release a rating action. Such an outcome is not anticipated if bond investors are oblivious to the CRAs' rating calendars, and in consequence a business-as-usual approach is taken during the pandemic. To test this prediction, we regress the sovereign bond yield spreads on *Count* and *Downaction* using the sovereign credit rating

[25] Additionally, we check robustness of our results from the analyses of individual CRAs using mortality rates. We find that the results remain unchanged and strongly consistent with the results using infection case rates. Moreover, mortality rates are insignificant in all model specifications, thereby lend support to our argument that CRAs' sovereign rating assessments are not triggered directly by the depth of the health crisis. Full results of Eq. (2) using mortality rates are displayed in Appendix C.

actions announced by S&P, Moody's and Fitch during the period January 2020 - March 2021. Our regressions utilise a large cross-country dataset of sovereign bond spreads obtained from Datastream.[26]

We argue that an empirical analysis from the perspective of financial markets provides original insights to the literature. Recall that the current situation of the pandemic is different to the past episodes of market downturns which moved CRAs to the forefront of the debate. For example, one could observe accelerated rating committees during the 2010 European sovereign debt crisis when S&P reviewed all and downgraded several Euro area sovereigns in January 2012 (S&P, 2012). Although CRAs' accelerating approach provided rating users with a full view of comparable ratings, it also subjected them to criticism from regulators. Public criticism against the CRAs also emerged during the 1997 Asian currency crisis and the 2007 global financial crisis. CRAs were blamed for following rather than leading the market (i.e., upgrades in good times and downgrades in bad times) (Kaminsky and Schmukler, 2002). The pro-cyclicality of sovereign ratings exacerbates the euphoria among investors on the bond markets, thereby aggravating the market instability (Afonso et al., 2014; Reisen and Maltzan, 1999). Therefore, if the markets can identify CRAs' change of approach (from accelerating review efforts in the past to adhering to the minimum regulatory requirements during the ongoing pandemic) then sovereign rating actions will not prompt as significant adjustment in sovereign credit spreads as documented in the past crises (Baum et al., 2016; De Santis, 2014). In this respect, our empirical analysis in this section makes an original contribution to the literature.

To test our prediction, we employ the following multivariate linear regression model:

$$\Delta Spread_{i,t} = \beta_1 Count_{i,j,t} + \beta_2 Downaction_{i,j,t} + \beta_3 Downaction_{i,j,t} * CaseRates_{i,t} + \beta_4 Downaction_{i,j,t} * GovtResponse_{i,t} + \beta_5 GDP\_Outlook_{i,t} + \beta_6 CAB\_Outlook_{i,t} + \beta_7 NetLB\_Outlook_{i,t} + \beta_8 CaseRates_{i,t} + \beta_9 GovtResponse_{i,t} + \beta_{10} ShockandAwe_t + \beta_{11} Maturity_{i,t} + \beta_{12} Amount_{i,t} + \lambda Region + \theta CRA + \varepsilon_{i,j,t} \quad (3)$$

Eq. (3) is estimated for the pooled sample and for individual CRAs.[27] Note for the latter regressions the CRA dummy is removed.

[26] Merging bond spreads with our sample results in missing data points due to the scarcity of bond data. Our pooled sample is left with 2328 observations for 72 countries for whom bond yields are available.

The dependent variable $\Delta Spread_{i,t}$ represents the change of sovereign bond yield spread[28] (measured in basis points) of country *i* in the event window [0,+1]. Date 0 is the event date when the rating action is publicly released and date +1 is the business day immediately following date 0. Our data includes US dollar denominated senior unsecured sovereign bonds whose market data is available during the examined period. Since each sovereign might have more than one bond outstanding, we select for each sovereign the bond with the largest issue volume as representative bond. The bonds' remaining maturities range from one year to 29 years.

Although we impose several data filtering rules to make sure that bond data is homogenous such as currency of denomination, seniority, coupon type, absence of embedded options, our bond spread data is heterogenous in terms of issue volume ($Amount_{i,t}$) and maturity ($Maturity_{i,t}$). Therefore, in Eq. (3), we control for these two bond specific characteristics that can affect the bond spreads.

The remaining variable descriptions follow those of Eq. (1). Finally, we include the interactions of $Downaction_{i,j,t}$ with two COVID-19 related variables including $CaseRates_{i,t}$ and $GovtResponse_{i,t}$ to capture the effects of country-specific depth of the health crisis and the government response to the crisis on the information value of sovereign rating news.

We envisage that coefficient $\beta_1$ on *Count* variable will be statistically significant with a positive sign if markets embed the CRAs' business-as-usual approach into the bond prices. Longer the time elapsed since the previous rating review (closer it is to the next rating committee), the bigger the spreads as markets adjust pricing with expectation of a forthcoming rating action.

Moreover, sovereign bond market reaction to sovereign rating news is captured by the coefficient $\beta_2$ on *Downaction*. We predict $\beta_2$ will be statistically insignificant if the CRAs' business-as-usual working mode is reflected in the sovereign credit premium (spreads). This is because the rating actions are anticipated by the markets and spreads adjust in the period leading to the actual announcement of rating changes.

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[27] The literature reveals mixed results regarding the effects of individual CRA's rating news on securities' prices, whereby foreign exchange rates, bond spreads and credit default swaps (CDS) spreads react heterogeneously to the sovereign rating news from individual CRAs (e.g., Afonso et al., 2012; Alsakka and ap Gwilym, 2012; Brooks et al., 2004).

[28] Spread is the yield to maturity of a sovereign bond minus the yield on a benchmark US treasury note/bond with comparable maturity with the sovereign bond of interest.

Table 6 presents the full estimation results. Pooled results are displayed in Columns (1)-(2) while individual CRA results in Columns (3)-(8). Variable *Count* is indistinguishable from zero in all model specifications. This is in line with the notion that rating actions released during the pandemic are not anticipated by the financial market participants, which is opposite to our expectation. More importantly, it implies that CRAs' disappointing reactions to the pandemic have not been fully picked up by the financial markets.

Consistent with the above finding, we obtain positive estimates on the coefficient $\beta_2$ of *Downaction* in Columns (1), (2). $\beta_2$ remains significant at 1% level and robust to the inclusion of region fixed effects. The estimation on the pooled sample reveals that, compared to the benchmark cases of no rating news, confirmations and positive rating news, *ΔSpread* increases by 71.06 basis points when a CRA releases a negative outlook. The relationship between rating actions and bond spreads is strong for S&P (Table 6, Columns (3) and (4)) and moderate for Moody's in individual CRAs sub-samples (Table 6, Columns (5) and (6)). Contrary to S&P and Moody's, Fitch's rating announcements during the pandemic do not trigger significant immediate reactions in the sovereign bond yield spreads. Our results show that the markets do not realise there has been a change of working mode among global CRAs, particularly S&P and Moody's. Their rating actions announced during the pandemic still trigger significant reactions from the markets, especially the negative actions by S&P, which resembles what happened during the European sovereign debt crisis (Alsakka and ap Gwilym, 2013, Alsakka et al., 2017).

Turning to the interactions of *Downaction* with *CaseRates* and with *GovtResponse*, we do not find any evidence that the magnitude of the market reactions to rating news varies with the spread of the virus (coefficient estimate $\beta_3$ on the interaction of *Downaction* with *CaseRates* is insignificant in all model specifications*)*. The estimates of $\beta_4$ on the interaction of *Downaction* with the government response index *GovtResponse* are negative and strongly significant at 1% level in the pooled sample and the sub-sample of S&P. It indicates that the restrictive measures put in place by governments in containing the spread of the virus have attenuating effects on the yield spreads when S&P announces a negative rating action. This result is interesting as it reveals that there is a disagreement between CRAs and the market participants regarding the counter measures imposed by governments during the pandemic. From the perspective of the market participants, restrictions measures are perceived positively. This might be because investors put more hope in a quick return to normality in countries that take prompt actions to contain the virus. This result contrasts with our previous sections which highlight the detrimental repercussion of such containing measures on sovereign creditworthiness.

In summary, our bond analysis shows that investors do not recognise the global CRAs' business-as-usual working mode during the pandemic. Accordingly, rating actions released during COVID-19 by S&P and Moody's are still treated as 'news', hence reflected in the adjustments of sovereign credit spreads. In addition, the magnitude of the yield spread changes following a release of a negative rating action vary with the governments' response to COVID-19. Despite the economic cost of governments' counter measures, the market perceives them to be a necessary step in moving a country out of the epidemic and bringing the economy back to normal.

## 6. Conclusion

This is the first paper that investigates the response of the three largest CRAs to the COVID-19 pandemic. We document four key empirical findings. We find that economic repercussions of the pandemic, such as a country's economic outlook and the government's response to the health crisis triggered negative sovereign rating actions, not the severity of the pandemic itself (measured by case and mortality rates). Each additional percentage point reduction in the 2020-2021 average GDP growth forecast increased the likelihood of a rating downgrade by 0.42%, and that of a negative outlook by 0.40%.

On the other hand, we find that the government's response to the pandemic has unintended consequences for sovereign creditworthiness. Specifically, more comprehensive measures to fight the pandemic such as restricting mobility and contact or mitigating public spending programmes lead to a higher likelihood of negative revisions. A one point increase in the index value increases the likelihood of a downgrade or a negative outlook by 0.03%.

Contrary to expectations, our results conclude that in the face of an unprecedented crisis, CRAs have often continued to operate in a business-as-usual mode reviewing ratings close to the dates when they would have been due to be reviewed for regulatory purposes. For each month that the preceding rating review ages, the probability of a downgrade increases by 0.14% and that of a negative outlook or watch by 0.13%. This finding has policy implications suggesting that the CRAs prefer to stick to initial committees set in advance rather than reacting in a more timely manner to the rapidly deteriorating fundamentals.

Although CRAs' hesitance in elevating rating reviews in the pandemic is disappointing from the markets' perspective, our findings show that rating users do not realise this. We document two important evidences for the market's oblivion to the CRAs' business-as-usual working mode. First, we find no evidence that sovereign credit spreads adjust as CRAs move closer to a next pre-scheduled review date. Second, actual

sovereign rating announcements in the pandemic are still met with significant reactions in the sovereign credit spreads. Specifically, spreads can increase by 71 basis points in the window [0; +1] of a negative sovereign rating action in the pandemic. Amongst the CRAs, downgrades by S&P caused the largest market impact. Apart from the market oblivion to the CRAs business-as-usual mode, we find a smaller increase in yield spreads for countries actively engaged in a fight against the virus. Our finding implies that the CRAs and investors are in disagreement. CRAs were more likely to lower the rating when a government pulled the resources to stop the spread of the virus. Investors, on the other hand have rewarded decisive action by governments with lower spreads.



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**Table 1 - Credit rating agencies' rating reviews from 30 Jan 2020 to 31 Mar 2021 - by IMF regions**

| Region | No. of Obs. | Sovereigns | Reviews/ Reviewed Sovereigns | | | | | % Neg Revisions | % Sovereigns Received Negative Revisions |
|---|---|---|---|---|---|---|---|---|---|
| | | | Affirmation or Positive Revisions/ Sovereigns | Negative Outlooks or Watches/ Sovereigns | Downgrades/ Sovereigns | Total Negative Revisions/ Sovereigns | Total Revisions/ Sovereigns | | |
| PANEL I: 3 CRAS | | | | | | | | | |
| ED ASIA | 563 | 15 | 24/9 | 15/10 | 10/5 | 25/11 | 49/13 | 4.44 | 73.33 |
| ED EUR | 502 | 13 | 56/13 | 12/9 | 1/1 | 13/9 | 69/13 | 2.59 | 69.23 |
| LAC | 853 | 23 | 39/17 | 25/15 | 36/15 | 61/19 | 100/23 | 7.15 | 82.61 |
| ME&CA | 698 | 19 | 54/16 | 20/13 | 14/6 | 34/14 | 88/18 | 4.87 | 73.68 |
| SSA | 862 | 29 | 52/23 | 26/19 | 31/17 | 57/25 | 109/28 | 6.61 | 86.21 |
| AEs | 1,693 | 38 | 158/38 | 23/15 | 7/6 | 30/21 | 188/38 | 1.77 | 55.26 |
| **Total** | **5,171** | **137** | **383/116** | **121/82** | **99/48** | **220/99** | **603/133** | **4.25** | **72.26** |
| PANEL II: S&P | | | | | | | | | |
| ED ASIA | 182 | 12 | 10/8 | 4/4 | 3/2 | 7/6 | 17/12 | 3.85 | 50.00 |
| ED EUR | 180 | 12 | 27/12 | 5/5 | 0/0 | 5/5 | 32/12 | 2.78 | 41.67 |
| LAC | 315 | 23 | 21/16 | 9/9 | 14/11 | 23/16 | 44/23 | 7.30 | 69.57 |
| ME&CA | 229 | 16 | 30/15 | 6/6 | 4/3 | 10/8 | 40/16 | 4.37 | 50.00 |
| SSA | 268 | 19 | 25/17 | 9/9 | 10/10 | 19/13 | 44/19 | 7.09 | 68.42 |
| AEs | 568 | 36 | 73/36 | 8/8 | 0/0 | 8/8 | 81/36 | 1.41 | 22.22 |
| **Total** | **1742** | **118** | **186/104** | **41/41** | **31/26** | **72/56** | **258/118** | **4.13** | **47.46** |
| PANEL III: MOODY'S | | | | | | | | | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ED ASIA | 210 | 15 | 6/6 | 5/5 | 3/3 | 8/6 | 14/11 | 3.81 | 40.00 |
| ED EUR | 171 | 13 | 8/8 | 1/1 | 1/1 | 2/2 | 10/10 | 1.17 | 15.38 |
| LAC | 291 | 22 | 6/6 | 8/8 | 9/7 | 17/13 | 23/16 | 5.84 | 59.09 |
| ME&CA | 249 | 19 | 8/6 | 6/6 | 4/3 | 10/7 | 18/12 | 4.02 | 36.84 |
| SSA | 333 | 25 | 9/8 | 11/11 | 10/9 | 21/17 | 30/20 | 6.31 | 68.00 |
| AEs | 525 | 37 | 20/20 | 2/2 | 1/1 | 3/3 | 23/23 | 0.57 | 8.11 |
| **Total** | **1779** | **131** | **57/54** | **33/33** | **28/24** | **6[illegible]/48** | **118/92** | **3.43** | **36.64** |
| PANEL IV: FITCH | | | | | | | | | |
| ED ASIA | 171 | 11 | 8/6 | 6/6 | [illegible]/3 | 10/7 | 18/11 | 5.85 | 63.64 |
| ED EUR | 151 | 10 | 21/10 | 6/6 | 0/0 | 6/6 | 27/10 | 3.97 | 60.00 |
| LAC | 247 | 18 | 12/11 | 8/[illegible] | 13/10 | 21/16 | 33/18 | 8.50 | 88.89 |
| ME&CA | 220 | 16 | 16/11 | 8/8 | 6/5 | 14/11 | 30/16 | 6.36 | 68.75 |
| SSA | 261 | 19 | 18/13 | 6/6 | 11/8 | 17/14 | 35/19 | 6.51 | 73.68 |
| AEs | 600 | 38 | 65/25 | 13/13 | 6/6 | 19/18 | 84/38 | 3.17 | 47.37 |
| **Total** | **1650** | **112** | **149/86** | **47/47** | **40/32** | **87/72** | **227/112** | **5.27** | **64.29** |

Notes: This table presents summary statistics for the credit rating dataset, which includes monthly ratings including outlook and watch by S&P, Moody's and Fitch from 137 sovereigns for the period 30 Jan 2020- 31 Mar 2021. Abbreviation of regions: ED ASIA (Emerging & Developing Asia), ED EUR (Emerging & Developing Europe), LAC (Latin America & Caribbean), ME&CA (Middle East & Central Asia), SSA (Sub-Saharan Africa), and AEs (Advanced Economies).

**Table 2 - Summary statistics**

| Variables | Units | Definitions | N | median | mean | sd | min | max |
|---|---|---|---|---|---|---|---|---|
| **PANEL I: 3 CRAs** | | | | | | | | |
| Downaction | 0-1-2 | 0 No review/Affirma/Pos review; 1 Neg outlook/watch; 2 Downgrade | 5171 | 0.00 | 0.06 | 0.31 | 0.00 | 2.00 |
| CAB_Outlook | % GDP | Change in IMF's Current Account Balance forecast (% GDP, 2020-2021 average) from Oct 2019 to Oct 2020 | 5171 | -0.19 | -0.83 | 3.13 | -14.76 | 5.51 |
| NetLB_Outlook | % GDP | Change in IMF's Govt Net Lending/Borrowing forecast (% GDP, 2020-2021 average) from Oct 2019 to Oct 2020 | 5171 | -2.34 | -2.74 | 2.68 | -14.70 | 3.10 |
| GDP_Outlook | % GDP | Change in IMF's GDP forecast (%, 2020-2021 average) from Oct 2019 to Oct 2020 | 5171 | -2.16 | -2.06 | 1.44 | -5.40 | 1.76 |
| CaseRates | 1/million | COVID-19 cases per 1 million people | 5171 | 1444.49 | 9087.26 | 16235.09 | 0.03 | 79597.33 |
| GovtResponse | 0-100 | Government response to COVID-19 index | 5171 | 58.85 | 55.53 | 16.86 | 0.00 | 89.69 |
| Count | months | No. of months since the last rating review by three CRAs | 5171 | 4.60 | 6.27 | 5.86 | 0.03 | 32.43 |
| Count* | months | No. of months since the last rating review by three CRAs excluding non-rating events | 603 | 6.07 | 7.81 | 5.73 | 0.17 | 32.43 |
| ShockandAwe | 0-1 | 1 March and April 2020; 0 Otherwise | 5171 | 0.00 | 0.13 | 0.34 | 0.00 | 1.00 |
| **PANEL II: S&P** | | | | | | | | |
| Downaction | 0-1-2 | 0 No review/Affirma/Pos review; 1 Neg outlook/watch; 2 Downgrade | 1742 | 0.00 | 0.06 | 0.30 | 0.00 | 2.00 |
| CAB_Outlook | % GDP | Change in IMF's Current Account Balance forecast (% GDP, 2020-2021 average) from Oct 2019 to Oct 2020 | 1742 | -0.20 | -0.81 | 2.94 | -14.76 | 5.30 |
| NetLB_Outlook | % GDP | Change in IMF's Govt Net Lending/Borrowing forecast (% GDP, 2020-2021 average) from Oct 2019 to Oct 2020 | 1742 | -2.38 | -2.78 | 2.68 | -14.70 | 3.10 |
| GDP_Outlook | % GDP | Change in IMF's GDP forecast (%, 2020-2021 average) from Oct 2019 to Oct 2020 | 1742 | -2.25 | -2.08 | 1.41 | -5.40 | 1.26 |
| CaseRates | 1/million | COVID-19 cases per 1 million people | 1742 | 1444.37 | 9287.55 | 16486.51 | 0.02 | 79597.33 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| GovtResponse | 0-100 | Government response to COVID-19 index | 1742 | 58.85 | 55.86 | 16.57 | 0.00 | 89.69 |
| SP_count | months | No. of months since the last rating review by S&P | 1742 | 3.63 | 3.95 | 2.74 | 0.03 | 15.37 |
| SP_count* | months | No. of months since the last rating review by S&P excluding non-rating events | 258 | 6.07 | 5.88 | 2.65 | 0.20 | 15.37 |
| ShockandAwe | 0-1 | 1 March and April 2020; 0 Otherwise | 1742 | 0.00 | 0.14 | 0.35 | 0.00 | 1.00 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **PANEL III: MOODY'S** | | | | | | | | |
| Downaction | 0-1-2 | 0 No review/Affirmation/Pos review; 1 Neg outlook/watch; 2 Downgrade | 1779 | 0.00 | 0.05 | 0.28 | 0.00 | 2.00 |
| CAB_Outlook | % GDP | Change in IMF's Current Account Balance forecast (% GDP, 2020-2021 average) from Oct 2019 to Oct 2020 | 1779 | -0.20 | -0.80 | 3.13 | -14.76 | 6.16 |
| NetLB_Outlook | % GDP | Change in IMF's Govt Net Lending/Borrowing forecast (% GDP, 2020-2021 average) from Oct 2019 to Oct 2020 | 1779 | -2.28 | -2.62 | 2.60 | -14.70 | 2.76 |
| GDP_Outlook | % GDP | Change in IMF's GDP forecast (%, 2020-2021 average) from Oct 2019 to Oct 2020 | 1779 | -2.16 | -2.06 | 1.44 | -5.80 | 1.76 |
| CaseRates | 1/million | COVID-19 cases per 1 million people | 1779 | 1246.15 | 8379.91 | 15421.28 | 0.03 | 78249.83 |
| GovtResponse | 0 to 100 | Government response to COVID-19 index | 1779 | 58.07 | 54.82 | 17.06 | 0.00 | 89.69 |
| Moody's_count | months | No. of months since the last rating review by Moody's | 1779 | 9.20 | 10.56 | 7.59 | 0.03 | 32.43 |
| Moody's_count* | months | No. of months since the last rating review by Moody's excluding non-rating events | 118 | 14.53 | 14.79 | 9.00 | 0.83 | 32.43 |
| ShockandAwe | 0-1 | 1 March and April 2020; 0 Otherwise | 1779 | 0.00 | 0.12 | 0.32 | 0.00 | 1.00 |
| **PANEL IV: FITCH** | | | | | | | | |
| Downaction | 0-1-2 | 0 No review/Affirmation/Pos review; 1 Neg outlook/watch; 2 Downgrade | 1650 | 0.00 | 0.08 | 0.35 | 0.00 | 2.00 |
| CAB_Outlook | % GDP | Change in IMF's Current Account Balance forecast (% GDP, 2020-2021 average) from Oct 2019 to Oct 2020 | 1650 | -0.17 | -0.86 | 3.32 | -14.76 | 5.51 |
| NetLB_Outlook | % GDP | Change in IMF's Govt Net Lending/Borrowing forecast (% GDP, 2020-2021 average) from Oct 2019 to Oct 2020 | 1650 | -2.52 | -2.84 | 2.75 | -14.70 | 3.10 |
| GDP_Outlook | % GDP | Change in IMF's GDP forecast (%, 2020-2021 average) from Oct 2019 to Oct 2020 | 1650 | -2.16 | -2.05 | 1.49 | -5.80 | 1.76 |
| CaseRates | 1/million | COVID-19 cases per 1 million people | 1650 | 1683.13 | 9626.56 | 16746.85 | 0.02 | 79789.67 |
| GovtResponse | 0-100 | Government response to COVID-19 index | 1650 | 59.11 | 55.93 | 16.94 | 0.00 | 89.69 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Fitch_count | months | No. of months since the last rating review by Fitch | 1650 | 3.73 | 4.09 | 2.73 | 0.03 | 12.10 |
| Fitch_count* | months | No. of months since the last rating review by Fitch excluding non-rating events | 227 | 6.07 | 6.37 | 2.41 | 0.17 | 12.10 |
| ShockandAwe | 0-1 | 1 March and April 2020; 0 Otherwise | 1650 | 0.00 | 0.14 | 0.34 | 0.00 | 1.00 |

Notes: This table presents the summary statistics, abbreviations and definitions of variables used in the multivariate analysis on 137 sovereigns rated by S&P, Moody's and Fitch for the period 30 Jan 2020- 31 Mar 2021. "Obs." is the number of observations. "S.D." is the standard deviation. *CAB_Outlook*, *NetLB_Outlook*, *GDP_Outlook*, and *CaseRates* are winsorised per sub-sample at the 1st and 99th percentiles. Sources of data are explained in Section 3.1.

| Region | N | Sov | CAB_Outlook (mean ) | NetLB_Outlook (mean ) | GDP_Outlook (mean ) | CaseRates (mean) | GovtResponse (mean) | Count (mean) | Count* (mean ) |
|---|---|---|---|---|---|---|---|---|---|
| PANEL I: 3 CRAs | | | | | | | | | |
| ED ASIA | 563 | 15 | -0.33 | -2.04 | -2.05 | 881.10 | 54.96 | 6.03 | 8.82 |
| ED EUR | 502 | 13 | -0.28 | -2.19 | -1.93 | 13033.52 | 52.78 | 5.93 | 7.13 |
| LAC | 853 | 23 | -0.93 | -2.27 | -2.44 | 1052.08 | 59.93 | 6.14 | 8.27 |
| ME&CA | 698 | 19 | -2.48 | -3.36 | -2.39 | 1121.48 | 58.88 | 6.43 | 6.81 |
| SSA | 862 | 29 | -0.78 | -1.80 | -2.09 | 1771.08 | 50.75 | 6.08 | 7.52 |
| AEs | 1693 | 38 | -0.44 | -3.61 | -1.75 | 12808.53 | 55.36 | 6.54 | 8.18 |
| **Total** | **5171** | **137** | **-0.83** | **-2.74** | **-2.06** | **9087.26** | **55.53** | **6.27** | **7.81** |
| PANEL II: S&P | | | | | | | | | |
| ED ASIA | 182 | 12 | -0.45 | -2.29 | -2.03 | 894.23 | 56.25 | 4.96 | 7.60 |
| ED EUR | 180 | 12 | -0.36 | -2.23 | -1.95 | 12588.65 | 52.81 | 3.14 | 4.88 |
| LAC | 315 | 23 | -1.11 | -2.31 | -2.42 | 10330.33 | 59.71 | 4.47 | 7.16 |
| ME&CA | 229 | 16 | -2.67 | -3.43 | -2.34 | 11223.14 | 58.59 | 3.47 | 4.86 |
| SSA | 268 | 19 | -0.69 | -1.78 | -2.19 | 1789.37 | 51.47 | 3.50 | 4.94 |
| AEs | 568 | 36 | -0.18 | -3.62 | -1.79 | 13110.03 | 55.54 | 4.01 | 6.24 |
| **Total** | **1742** | **118** | **-0.81** | **-2.78** | **-2.08** | **9287.55** | **55.86** | **3.95** | **5.88** |
| PANEL III: MOODY'S | | | | | | | | | |
| ED ASIA | 210 | 15 | -0.65 | -1.94 | -2.13 | 776.35 | 53.15 | 8.08 | 12.09 |
| ED EUR | 171 | 13 | -0.33 | -2.17 | -1.96 | 13507.38 | 53.15 | 11.23 | 19.11 |
| LAC | 291 | 22 | -0.81 | -2.16 | -2.45 | 9725.41 | 60.89 | 9.06 | 12.31 |
| ME&CA | 249 | 19 | -2.24 | -3.29 | -2.41 | 10584.14 | 57.83 | 11.27 | 11.81 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| SSA | 333 | 25 | -0.45 | -1.58 | -1.98 | 1425.89 | 48.71 | 9.60 | 12.06 |
| AEs | 525 | 37 | -0.55 | -3.64 | -1.73 | 12370.85 | 55.11 | 12.43 | 22.91 |
| **Total** | **1779** | **131** | **-0.80** | **-2.62** | **-2.06** | **8379.91** | **54.82** | **10.56** | **14.79** |
| PANEL IV: FITCH | | | | | | | | | |
| ED ASIA | 171 | 11 | 0.19 | -1.99 | -1.99 | 995.75 | 55.82 | 4.65 | 7.42 |
| ED EUR | 151 | 10 | -0.14 | -2.17 | -1.87 | 1302.19 | 52.33 | 3.26 | 5.36 |
| LAC | 247 | 18 | -0.77 | -2.33 | -2.49 | 170[illegible]97 | 59.08 | 4.81 | 6.95 |
| ME&CA | 220 | 16 | -2.55 | -3.38 | -2.44 | 1618.58 | 60.38 | 4.04 | 6.41 |
| SSA | 261 | 19 | -1.27 | -2.12 | -2.13 | 2192.70 | 52.61 | 4.24 | 6.88 |
| AEs | 600 | 38 | -0.59 | -3.57 | -1.75 | 12879.46 | 55.40 | 3.80 | 6.03 |
| **Total** | **1650** | **112** | **-0.86** | **-2.84** | **-2.05** | **9626.56** | **55.93** | **4.09** | **6.37** |

Notes: This table presents the summary statistics for 137 sovereigns rated by S&P, Moody's and Fitch for the period 30 Jan 2020- 31 Mar 2021 using IMF region classification. "Obs." is the number of observations. For regions and variables' definitions refer to Tables 1 and 2.

**Table 4 - Pooled results**

| **3 CRAs** | | | | **Marginal effects Spec. (3) (%)** | | |
|---|---|---|---|---|---|---|
| | Spec. (1) | Spec. (2) | Spec. (3) | 0 | 1 | 2 |
| CAB_Outlook | | -0.018 | 0.010 | | | |
| | | (-1.57) | (0.71) | | | |
| NetLB_Outlook | | 0.012 | -0.066* | 0.286** | -0.139** | -0.147** |
| | | (0.82) | (-2.25) | (2.22) | (-2.20) | (-2.19) |
| GDP_Outlook | | -0.117*** | -0.103*** | 0.822*** | -0.400*** | -0.422*** |
| | | (-4.71) | (-3.89) | (3.83) | (-3.83) | (-3.61) |
| CaseRates | -0.000** | -0.000 | -0.000 | | | |
| | (-2.10) | (-1.15) | (-0.14) | | | |
| GovtResponse | 0.000*** | 0.008*** | 0.007*** | -0.056*** | 0.027*** | 0.029*** |
| | (4.07) | (3.94) | (3.34) | (-3.35) | (3.20) | (3.36) |
| Count | 0.030*** | 0.030*** | 0.033*** | -0.265*** | 0.129*** | 0.136*** |
| | (4.62) | (4.72) | (5.39) | (-5.29) | (4.75) | (5.27) |
| Shockandawe | 0.726*** | 0.688*** | 0.748*** | -8.733*** | 3.960*** | 4.773*** |
| | (9.71) | (9.16) | (9.45) | (-7.12) | (6.59) | (6.36) |
| ED ASIA | | | 0.095 | | | |
| | | | (0.68) | | | |
| ED EUR | | | -0.242 | | | |
| | | | (-1.57) | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| LAC | | | 0.269** | -2.680** | 1.275** | 1.405** |
| | | | (2.34) | (-2.43) | (2.44) | (2.37) |
| SSA | | | 0.374*** | -4.032*** | 1.877*** | 2.155*** |
| | | | (3.07) | (-3.12) | (3.16) | (2.97) |
| AEs | | | -0.482*** | 2.662*** | -1.412*** | -1.251*** |
| | | | (-3.80) | (3.24) | (-3.27) | (-3.06) |
| CRA dummies | Yes | Yes | Yes | | | |
| pseudo R-squared | 0.072 | 0.083 | 0.119 | | | |
| No. of Obs. | 5171 | 5171 | 5171 | | | |

Note: This table reports the estimated coefficients and t-statistics in parentheses from various specifications of the ordered probit model of Eq. (1) (see Section 5.1). The credit rating dataset consists of sovereign ratings from 137 sovereigns for the period 30 Jan 2020- 31 Mar 2021. The dependent variable is *Downaction.* The variable definitions and summary statistics are presented in Table 2. We further estimate the effect of the statistically significant coefficients resulting from Spec. (3) on the probability of sovereign rating events using Marginal effects (MEs). Significant levels are: * p<0.10 ** p<0.05 *** p<0.01. Errors are estimated with Huber-White robust standard errors.

| PANEL I | S&P | | | Moody's | | | Fitch | | |
|---|---|---|---|---|---|---|---|---|---|
| | Spec. (1) | Spec. (2) | Spec. (3) | Spec. (1) | Spec. (2) | Spec. (3) | Spec. (1) | Spec. (2) | Spec. (3) |
| CAB_Outlook | | -0.072*** | -0.037 | | -0.009 | 0.022 | | 0.021 | 0.038* |
| | | (-2.98) | (-1.33) | | (-0.43) | (0.87) | | (1.07) | (1.78) |
| NetLB_Outlook | | 0.044* | -0.009 | | -0.011 | -0.075** | | -0.005 | -0.031 |
| | | (1.68) | (-0.30) | | (-0.42) | (-2.44) | | (-0.22) | (-1.15) |
| GDP_Outlook | | -0.098** | -0.083 | | -0.102** | -0.107** | | -0.158*** | -0.143*** |
| | | (-2.03) | (-1.64) | | (-2.52) | (-2.45) | | (-3.71) | (-3.10) |
| CaseRates | -0.000 | -0.000 | 0.000 | -0.000 | -0.000 | -0.000 | -0.000** | -0.000* | -0.000* |
| | (-0.54) | (-0.27) | (0.49) | (-1.36) | (-0.88) | (-0.07) | (-2.32) | (-1.94) | (-1.79) |
| GovtResponse | 0.005 | 0.005 | 0.005 | 0.006 | 0.005 | 0.004 | 0.016*** | 0.016*** | 0.016*** |
| | (1.43) | (1.36) | (1.19) | (1.62) | (1.47) | (0.85) | (4.26) | (4.33) | (4.29) |
| Count | 0.082*** | 0.089*** | 0.096*** | 0.006 | 0.006 | 0.016** | 0.133*** | 0.138*** | 0.133*** |
| | (4.90) | (5.08) | (5.00) | (0.81) | (0.82) | (2.26) | (8.01) | (8.50) | (7.96) |
| ShockandAwe | 0.773*** | 0.720*** | 0.792*** | 0.402*** | 0.351** | 0.419*** | 0.929*** | 0.888*** | 0.907*** |
| | (5.61) | (5.23) | (5.43) | (2.75) | (2.40) | (2.69) | (7.11) | (6.78) | (6.72) |
| ED ASIA | | | -0.075 | | | 0.194 | | | -0.085 |
| | | | (-0.28) | | | (0.82) | | | (-0.34) |
| ED EUR | | | -0.050 | | | -0.428 | | | -0.068 |
| | | | (-0.18) | | | (-1.33) | | | (-0.26) |
| LAC | | | 0.170 | | | 0.357* | | | 0.158 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | (0.82) | | | (1.78) | | | (0.76) |
| SSA | | | 0.480** | | | 0.495** | | | 0.173 |
| | | | (2.13) | | | (2.33) | | | (0.78) |
| AEs | | | -0.510** | | | -0.814*** | | | -0.294 |
| | | | (-2.04) | | | (-2.94) | | | (-1.43) |
| pseudo R-squared | 0.091 | 0.116 | 0.151 | 0.024 | 0.034 | 0.103 | 0.164 | 0.181 | 0.192 |
| No. of Obs. | 1742 | 1742 | 1742 | 1779 | 1779 | 1779 | 1650 | 1650 | 1650 |
| **PANEL II: Marginal effects Spec. (3) (%)** | **0** | **1** | **2** | **0** | **1** | **2** | **0** | **1** | **2** |
| GDP_Outlook | | | | 0.724** | -0.343** | -0.381** | 1.209*** | -0.567*** | -0.642*** |
| | | | | (2.35) | (-2.31) | (-2.22) | (3.09) | (-3.12) | (-2.81) |
| GovtResponse | | | | | | | -0.133*** | 0.063*** | 0.071*** |
| | | | | | | | (-4.21) | (3.85) | (3.89) |
| Count | -0.718*** | 0.367*** | 0.351*** | -0.105** | 0.050* | 0.055** | -1.119*** | 0.525*** | 0.595*** |
| | (-4.70) | (3.94) | (4.39) | (-2.23) | (1.96) | (2.38) | (-6.63) | (5.31) | (5.66) |
| AEs | 2.005 | -1.445* | -1.160* | 2.698** | -1.463** | -1.234** | | | |
| | (1.77) | (-1.81) | (-1.66) | (2.41) | (-2.37) | (-2.23) | | | |

Note: This table reports the estimated coefficients and t-statistics in parentheses from various specifications of the ordered probit model of Eq. (2) for S&P, Moody, and Fitch (see Section 5.2). The credit rating dataset consists of sovereign ratings from 118, 131, 112 sovereigns rated by S&P, Moody, and Fitch, respectively, for the period 30 Jan 2020- 31 Mar 2021. The dependent variable is *Downaction*. The variable definitions and summary statistics are presented in Table 2. We further estimate the effect of the statistically significant coefficients resulting from Spec. (3) on the probability of sovereign rating events using Marginal effects (MEs). Significant levels are: * p<0.10 ** p<0.05 *** p<0.01. Errors are estimated with Huber-White robust standard errors.

**Table 6 – The effects of sovereign rating actions on sovereign bond yield spreads during the pandemic**

| | Pooled | | S&P | | Moody's | | Fitch | |
|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| Count | 0.123 | 0.085 | 0.003 | -0.003 | 0.005 | 0.005 | 0.003 | -0.000 |
| | (1.24) | (0.85) | (0.22) | (-0.25) | (1.49) | (1.37) | (0.43) | (-0.04) |
| Downaction | 70.668*** | 71.062*** | 162.399*** | 163.953*** | 34.418*** | 33.836*** | 8.673 | 9.018 |
| | (11.87) | (11.93) | (13.67) | (13.72) | (3.46) | (3.39) | (1.10) | (1.15) |
| Downaction*CaseRates | -0.000 | -0.000 | -0.000 | -0.000 | -0.00[illegible] | -0.000* | 0.000 | 0.000 |
| | (-0.42) | (-0.49) | (-0.15) | (-0.18) | (-1.54) | (-1.65) | (0.18) | (0.21) |
| Downaction*GovtResponse | -0.993*** | -0.994*** | -2.608*** | -2.626*** | -0.297* | -0.276 | -0.048 | -0.051 |
| | (-9.96) | (-9.97) | (-12.50) | (-12.53) | (-1.73) | (-1.60) | (-0.38) | (-0.41) |
| GDP_Outlook | 0.173 | 0.084 | 0.4[illegible]6 | 0.423 | 0.281 | 0.100 | -0.152 | -0.080 |
| | (0.42) | (0.20) | (0.57) | (0.51) | (0.41) | (0.14) | (-0.29) | (-0.15) |
| CAB_Outlook | 0.626*** | 0.390 | 0.648 | 0.507 | 0.563 | 0.271 | 0.788*** | 0.580* |
| | (2.88) | (1.61) | (1.54) | (1.07) | (1.52) | (0.66) | (2.83) | (1.86) |
| NetLB_Outlook | -0.322 | 0.0[illegible]9 | -0.724 | -0.527 | -0.250 | -0.018 | -0.142 | 0.092 |
| | (-1.39) | (-0.35) | (-1.61) | (-1.06) | (-0.65) | (-0.04) | (-0.47) | (0.28) |
| CaseRates | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | -0.000 |
| | (0.85) | (0.64) | (0.63) | (0.53) | (0.58) | (0.66) | (0.34) | (-0.08) |
| GovtResponse | -0.026 | -0.047 | -0.019 | -0.050 | -0.058 | -0.082 | -0.006 | -0.027 |
| | (-0.63) | (-1.10) | (-0.23) | (-0.60) | (-0.83) | (-1.15) | (-0.11) | (-0.50) |
| ShockandAwe | -1.233 | -1.246 | 4.031 | 4.112 | -1.540 | -1.517 | -6.719*** | -6.701*** |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | (-0.74) | (-0.75) | (1.30) | (1.32) | (-0.54) | (-0.53) | (-3.07) | (-3.08) |
| _cons | -2.477 | -2.059 | -4.419 | -1.682 | -0.379 | -1.685 | -1.626 | 1.136 |
| | (-0.93) | (-0.68) | (-0.82) | (-0.28) | (-0.09) | (-0.35) | (-0.47) | (0.28) |
| Maturity | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Amount | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Region dummies | No | Yes | No | Yes | No | Yes | No | Yes |
| CRA dummies | Yes | Yes | No | No | No | No | No | No |
| adjusted R-squared | 0.072 | 0.076 | 0.196 | 0.196 | 0.046 | 0.048 | 0.038 | 0.052 |
| No. of Obs. | 2328 | 2328 | 826 | 826 | 741 | 741 | 761 | 761 |

Note: This table reports the estimated coefficients and t-statistics in parentheses from various specifications of the OLS model of Eq. (3) for the pooled sample (Column (1)-(2)) and for individual CRAs (Column (3)-(8)) (see Section 5.3). The dependent variable is sovereign bond yield spreads ($\Delta Spread$) calculated in the window [0;+1] of the sovereign rating events released in the period 30 Jan 2020 - 31 Mar 2021. The variable capturing the rating actions is *Downaction* which takes value two for downgrades, value one for negative outlook/watch and value zero for rating confirmations/positive rating changes/no rating changes. Definitions of other variables and summary statistics are presented in Table 2. Significance levels are: * p<0.10 ** p<0.05 *** p<0.01.

# Appendices

## *Appendix A - Data sampling and summary statistics*

**Table A.1 - Rating categories and numerical conversion**

| Long-term foreign currency issuer rating symbol | | | Numerical rating | Rating grade | |
|---|---|---|---|---|---|
| S&P | Moody's | Fitch | | | |
| AAA | Aaa | AAA | 22 | Prime high grade | |
| AA+ | Aa1 | AA+ | 21 | | |
| AA | Aa2/Aa | AA | 20 | High grade | |
| AA- | Aa3 | AA- | 19 | | |
| A+ | A1 | A+ | 18 | | Investment grade |
| A | A2 | A | 17 | Upper medium grade | |
| A- | A3 | A- | 16 | | |
| BBB+ | Baa1 | BBB+ | 15 | | |
| BBB | Baa2 | BBB | 14 | Lower medium grade | |
| BBB- | Baa3 | BBB- | 13 | | |
| BB+ | Ba1 | BB+ | 12 | | |
| BB | Ba2 | BB | 11 | Speculative | |
| BB- | Ba3 | BB- | 10 | | |
| B+ | B1 | B+ | 9 | | |
| B | B2 | B | 8 | Highly speculative | |
| B- | B3 | B- | 7 | | Non-investment grade |
| CCC+ | Caa1 | CCC+ | 6 | | |
| CCC | Caa2 | CCC | 5 | Substantial risks | |
| CCC- | Caa3 | CCC- | 4 | | |
| CC | Ca | CC | 3 | Extremely speculative | |
| C | | C | 2 | | |
| SD | D | RD/D | 1 | In default | |

Notes: According to S&P Global Ratings (Jan 2021). 'S&P's Global Rating Definitions'. Available from: https://www.standardandpoors.com/en_US/web/guest/article/-/view/sourceId/504352; Moody's Investor Services (Jan 2021). 'Rating Symbols and Definitions'. Available from: https://www.moodys.com/researchdocumentcontentpage.aspx?docid=PBC_79004; Fitch Ratings (Jun 2020). 'Rating Definitions'. Available from: https://www.fitchratings.com/research/fund-asset-managers/rating-definitions-11-06-2020.

**Table A.2. - List of negative rating reviews from 30th Jan 2020 to 31st Mar 2021**

| Entity | No. of Neg OL_W | | | No. of Downgrade | | | Entity | No. of Neg OL_W | | | No. of Downgrade | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | SP | Moody | Fitch | SP | Moody | Fitch | | SP | Moody | Fitch | SP | Moody | Fitch |
| Albania | | | | | | | Latvia | 1 | | | | | |
| Angola | | 1 | | 1 | 1 | 1 | Lebanon | | | | 1 | 1 | 1 |
| Aruba | | | 1 | 1 | | 1 | Lesotho | 1 | | | | | |
| Australia | 1 | | 1 | | | | Lithuania | | 1 | | | | |
| Austria | 1 | | | | | | Luxembourg | | | | | | |
| Azerbaijan | 1 | | 1 | | | | Macao | | | | | | |
| Bahamas | | 1 | | | 1 | | Malaysia | 1 | | 1 | 1 | | |
| Bahrain | | | 1 | 1 | | | Mali, Government of | | 1 | | | 1 | |
| Bangladesh | | | | | | | Malta | 1 | | 1 | | | |
| Barbados | | | | | | | Mauritius | | 1 | | | 1 | |
| Belarus | 1 | | 1 | | | | Mexico | | | | 1 | 1 | 1 |
| Belgium | 1 | | | | | | Moldova | | | | | | |
| Belize | | 1 | 2 | | 2 | 3 | Mongolia | | 1 | | | | |
| Benin | 1 | 1 | | | | | Morocco | 1 | 1 | 1 | 1 | | |
| Bolivia | | | 1 | 1 | 1 | 1 | Mozambique | | | | | | |
| Bosnia | | | 1 | | | | Namibia | 1 | 1 | | | 1 | |
| Botswana | | 1 | 1 | | | | Netherlands | | | | | | |
| Brazil | 1 | | 1 | | | | New Zealand | | | 1 | | | |
| Bulgaria | 1 | 1 | 1 | | | | Nicaragua | 1 | | | | | |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Burkina Faso | | | | | | | | | Niger | | | | | | | |
| Cabo Verde | 1 | | 1 | 1 | | 1 | | | Nigeria | | | 1 | 1 | | 1 | |
| Cambodia | | | | | | | | | Norway | | | | | | | |
| Cameroon | 1 | 1 | | | | 1 | | | Oman | 1 | 1 | | 2 | 2 | 2 | |
| Canada | | | | 1 | | | | | Pakistan | | 1 | | | | | |
| Chile | 1 | 1 | 1 | 1 | | 1 | | | Panama | | 1 | 1 | 1 | 1 | 1 | |
| China | | | | | | | | | Papua New Guinea | | | | | | 1 | |
| Colombia | | 1 | 1 | 1 | | | | | Paraguay | | | | | | | |
| Congo, Democratic Republic of the | | | 1 | | | | | | Peru | 1 | | | | | | |
| Congo, Republic of | | | 1 | | | 1 | | | Philippines | 1 | | | | | | |
| Costa Rica | | 1 | | 1 | | | | | Poland | | | | | | | |
| Cote d'Ivoire | | 1 | | | | | | | Portugal | 1 | | 1 | | | | |
| Croatia | 1 | 1 | | | | | | | Qatar | | | | | | | |
| Cyprus | 1 | | | | | | | | Republic of Fiji | | 1 | 1 | | | | |
| Czech Republic | | | | | | | | | Romania | 1 | 1 | | | | | |
| Denmark | | | | | | | | | Russia | | | | | | | |
| Dominican Republic | 1 | | 1 | | | | | | Rwanda | | 1 | 1 | | | | |
| Ecuador | | 1 | 1 | 3 | | 1 | 1 | | San Marino | | | | 1 | | | |
| Egypt | | | | | | | | | Saudi Arabia | 1 | 1 | | | | | |
| El Salvador | 1 | 1 | | | | | | | Senegal | | 1 | | | | | |
| Estonia | | | 1 | | | | | | Serbia | | 1 | 1 | | | | |
| Eswatini | | | | | 1 | | | | Seychelles | | | | 2 | | | |
| Ethiopia | | | 1 | 1 | 1 | | 1 | | Singapore | | | | | | | |

| | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Finland | | | | | | | | | Slovakia | 1 | | | 1 | | 1 | | | | |
| France | 1 | | 1 | | | | | | Slovenia | | | 1 | | | | | | | |
| Gabon | | | 1 | | | 1 | | | Solomon Islands | | | | | | | | | | |
| Georgia | 1 | | | 1 | | | | | South Africa | | | | | | 2 | | 2 | | 1 |
| Germany | | | | | | | | | Spain | | | | 1 | | | | | | |
| Ghana | | | 1 | | 1 | | | 1 | Sri Lanka | | | 1 | | | 2 | | 1 | | 2 |
| Greece | 1 | | | 1 | | | | | Suriname | | | 1 | 1 | | 2 | | 2 | | 1 |
| Guatemala | 1 | | 1 | | 1 | | 1 | | Sweden | | | | | | | | | | |
| Honduras | | | | | | | | | Switzerland | | | | | | | | | | |
| Hong Kong | | | | | | 1 | | | Taiwan | | | | | | | | | | |
| Hungary | | | | 1 | | | | | Tajikistan | | | | | | | | | | |
| Iceland | 1 | | | | | | | | Tanzania | | | | | | | | 1 | | |
| India | 1 | | | | | | 1 | | Thailand | 1 | | 1 | 1 | | | | | | |
| Indonesia | | | | 1 | | | | | Togo | | | | | | | | | | |
| Iraq | 1 | | | | | | | | Trinidad and Tobago | 1 | | | | | | | 1 | | |
| Ireland | | | | | | | | | Tunisia | 1 | | 1 | | | 1 | | | | |
| Israel | | | 1 | | | | | | Turkey | 1 | | | | | | | 1 | | |
| Italy | | | | | | 1 | | | Uganda | 1 | | | | | | | | | |
| Jamaica | 1 | | | 1 | | | | | Ukraine | 1 | | 1 | | | | | | | |
| Japan | 1 | | | 1 | | | | | United Arab Emirates | | | | | | | | | | |
| Jordan | 1 | | | | | | | | United Kingdom | | | | | 1 | 1 | | | | |
| Kazakhstan | | | | | | | | | United States | 1 | | | | | | | | | |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Kenya | 1 | 1 | 1 | | | 1 | Uruguay | | | | | | |
| Korea | | | | | | | Uzbekistan | | | 1 | | | |
| Kuwait | 1 | 1 | 1 | | 1 | 1 | Vietnam | 1 | | | | | |
| Kyrgyzstan | | 1 | | | | | Zambia | | | | 2 | 1 | 1 |
| Laos | 1 | 1 | | 1 | 1 | | | | | | | | |
| | | | | | | | **Total 137 sovereigns** | **45** | **46** | **40** | **28** | **31** | |

Notes: We collect rating history and press releases related to rating changes, outlook and credit watch revisions as well as rating affirmations by S&P, Moody's, and Fitch during the period 30 Jan 2020 – 31 Mar 2021 from S&P's Ratings Direct, Moody's website, and Fitch Connect. The final sample encompasses 5171 observations of 137 sovereigns spanning the period from 30 Jan 2020 to 31 Mar 2021. S&P assigned 49 negative outlooks/credit watches and 40 downgrades. Moody's assigned 45 negative outlooks/ credit watches and 28 downgrades. Fitch issued 46 negative outlooks/ credit watches and 31 downgrades.

**Appendix B - Pooled results (Replaced CaseRates with MortalityRates)**

| **3 CRAs** | | | | **Marginal effects Spec. (3)** | | |
|---|---|---|---|---|---|---|
| | Spec. (1) | Spec. (2) | Spec. (3) | 0 | 1 | 2 |
| CAB_Outlook | | -0.041*** | -0.014 | | | |
| | | (-2.94) | (-0.94) | | | |
| NetLB_Outlook | | 0.031* | -0.016 | | | |
| | | (1.88) | (-0.89) | | | |
| GDP_Outlook | | -0.107*** | -0.080*** | 0.659*** | -0.329*** | -0.330*** |
| | | (-4.25) | (-3.12) | (3.09) | (-3.06) | (-2.98) |
| MortalityRates | -0.000 | -0.000 | 0.000 | | | |
| | (-1.53) | (-0.14) | (0.36) | | | |
| GovtResponse | 0.006** | 0.005* | 0.005* | -0.042* | 0.021* | 0.021* |
| | (2.14) | (1.71) | (1.87) | (-1.88) | (1.86) | (1.87) |
| Count | 0.033*** | 0.034*** | 0.037*** | -0.284*** | 0.141*** | 0.142*** |
| | (4.74) | (4.86) | (5.53) | (-5.38) | (4.78) | (5.35) |
| ShockandAwe | 0.858*** | 0.843*** | 0.897*** | -11.435*** | 5.174*** | 6.260*** |
| | (10.41) | (10.12) | (10.31) | (-7.25) | (6.61) | (6.35) |
| ED ASIA | | | 0.103 | | | |
| | | | (0.64) | | | |
| ED EUR | | | -0.132 | | | |
| | | | (-0.81) | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| LAC | | | 0.358*** | -3.211*** | 1.583*** | 1.628*** |
| | | | (2.83) | (-2.98) | (2.99) | (2.85) |
| SSA | | | 0.473*** | -4.645*** | 2.239*** | 2.406*** |
| | | | (3.66) | (-3.72) | (3.82) | (3.42) |
| AEs | | | -0.330** | 1.690** | -0.919** | -0.772** |
| | | | (-2.39) | (2.15) | (-2.16) | (-2.09) |
| CRA dummies | Yes | Yes | Yes | | | |
| pseudo R-squared | 0.0841 | 0.0968 | 0.1293 | | | |
| No. of Obs. | 4641 | 4641 | 4641 | | | |

Note: This table reports the estimated coefficients and t-statistics in parentheses from various specifications of the ordered probit model of Eq. (1). The credit rating dataset consists of sovereign ratings from 137 sovereigns for the period 30 Jan 2020- 31 Mar 2021. The dependent variable is *Downaction*. The variable capturing severity of the outbreak is *MortalityRates* which is the cumulative death toll as a percentage of the population. The remainder of variable definitions and summary statistics are presented in Table 2. We further estimate the effects of the statistically significant coefficients resulting from Spec. (3) on the probability of sovereign rating events using Marginal effects (MEs). Significant levels are: * p<0.10 ** p<0.05 *** p<0.01. Errors are estimated with Huber-White robust standard errors.

**Appendix C - Individual CRA results (Replaced CaseRates with MortalityRates)**

| **PANEL I** | **S&P** | | | **Moody's** | | | **Fitch** | | |
|---|---|---|---|---|---|---|---|---|---|
| | Spec. (1) | Spec. (2) | Spec. (3) | Spec. (1) | Spec. (2) | Spec. (3) | Spec. (1) | Spec. (2) | Spec. (3) |
| CAB_Outlook | | -0.081*** | -0.055** | | -0.046* | -0.016 | | 0.001 | 0.018 |
| | | (-3.43) | (-2.24) | | (-1.76) | (-0.60) | | (0.03) | (0.73) |
| NetLB_Outlook | | 0.056** | 0.006 | | 0.025 | -0.039 | | 0.009 | -0.016 |
| | | (2.00) | (0.20) | | (0.79) | (-1.09) | | (0.33) | (-0.51) |
| GDP_Outlook | | -0.087** | -0.063 | | -0.094** | -0.079 | | -0.132*** | -0.117** |
| | | (-1.99) | (-1.31) | | (-2.13) | (-1.64) | | (-3.08) | (-2.55) |
| MortalityRates | -0.000 | -0.000 | 0.000 | -0.000 | -0.000 | 0.000 | -0.000 | -0.000 | -0.000 |
| | (-0.80) | (-0.03) | (0.61) | (-0.90) | (-0.23) | (0.55) | (-1.39) | (-1.10) | (-0.94) |
| GovtResponse | 0.002 | 0.002 | 0.003 | 0.004 | 0.003 | 0.004 | 0.015*** | 0.015*** | 0.015*** |
| | (0.50) | (0.33) | (0.57) | (0.83) | (0.49) | (0.60) | (2.93) | (2.77) | (2.93) |
| Count | 0.079*** | 0.085*** | 0.090*** | 0.011 | 0.011 | 0.020*** | 0.141*** | 0.141*** | 0.138*** |
| | (4.50) | (4.67) | (4.47) | (1.51) | (1.55) | (2.81) | (7.54) | (7.75) | (7.34) |
| ShockandAwe | 0.835*** | 0.846*** | 0.913*** | 0.536*** | 0.542*** | 0.618*** | 1.140*** | 1.091*** | 1.112*** |
| | (5.77) | (5.72) | (5.91) | (3.25) | (3.26) | (3.56) | (7.93) | (7.56) | (7.46) |
| ED ASIA | | | 0.035 | | | 0.199 | | | -0.027 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | (0.11) | | | (0.68) | | | (-0.10) |
| ED EUR | | | 0.062 | | | -0.270 | | | 0.038 |
| | | | (0.21) | | | (-0.78) | | | (0.14) |
| LAC | | | 0.293 | | | 0.498** | | | 0.220 |
| | | | (1.25) | | | (2.13) | | | (0.99) |
| SSA | | | 0.585** | | | 0.662*** | | | 0.275 |
| | | | (2.44) | | | (2.90) | | | (1.18) |
| AEs | | | -0.379 | | | -0.579** | | | -0.150 |
| | | | (-1.42) | | | (-2.01) | | | (-0.67) |
| pseudo R-squared | 0.095 | 0.121 | 0.127 | 0.030 | 0.043 | 0.112 | 0.180 | 0.191 | 0.199 |
| No. of Obs. | 1590 | 1590 | 1590 | 1585 | 1585 | 1585 | 1466 | 1466 | 1466 |
| **PANEL II Marginal effects Spec. (3) (%)** | **0** | **1** | **2** | **0** | **1** | **2** | **0** | **1** | **2** |
| GDP_Outlook | | | | | | | -0.965** | -0.467** | -0.498** |
| | | | | | | | (-2.54) | (-2.53) | (-2.38) |
| GovtResponse | | | | | | | -0.126*** | 0.061*** | 0.065*** |
| | | | | | | | (-2.92) | (2.86) | (2.71) |
| Count | -0.649*** | 0.354*** | 0.295*** | -0.132*** | 0.060** | 0.072*** | -1.137*** | 0.550*** | 0.587*** |
| | (-4.17) | (3.67) | (3.78) | (-2.72) | (2.25) | (2.95) | (-6.11) | (5.01) | (5.12) |
| AEs | | | | 1.668* | -0.891* | -0.776 | | | |

| | | | |
|---|---|---|---|
| | (1.70) | (-1.67) | (-1.64) |

Note: This table reports the estimated coefficients and t-statistics in parentheses from various specifications of the ordered probit model of Eq. (2) for S&P, Moody, and Fitch. The credit rating dataset consists of sovereign ratings from 137 sovereigns for the period 30 Jan 2020- 31 Mar 2021. The dependent variable is *Downaction*. The variable capturing severity of the outbreak is *MortalityRates* which is the cumulative death toll as a percentage of the population. The remainder of variable definitions and summary statistics are presented in Table 2. We further estimate the effects of the statistically significant coefficients resulting from Spec. (3) on the probability of sovereign rating events using Marginal effects (MEs). Significant levels are: * p<0.10 ** p<0.05 *** p<0.01. Errors are estimated with Huber-White robust standard errors

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Work described has not been published previously and is not under consideration for publication elsewhere. Additionally, submission to the journal is approved by all authors. If accepted the work will not be published anywhere else in the same form without the consent of the copyright-holder.

Best regards,

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**Disclosure by Firms under Voting Pressure**

**Abstract**

Firms with a negative ISS recommendation see significant reduction in shareholder support for their proposals and are likely to face pressure to increase support in upcoming meetings. We find that firms facing voting pressure are significantly more likely to disclose positive content in discretionary sections of Form 8-K that result in higher abnormal stock returns in the months prior to the shareholder meeting. The 8-Ks with good news in discretionary sections, filed prior to the shareholder meeting, are associated with higher support for management proposals in upcoming meetings. Finally, this selective filing of 8-Ks with good news is higher when investors are distracted and lower for family firms. The results point to understudied effect of ISS voting recommendation on firm's selective disclosure.

**Keywords**: Disclosure, 8-K, Shareholder meeting, Institutional Shareholder Services

**JEL classification**: G14; G23; G34

## 1. Introduction

Proxy advisory firms have a significant impact on proxy voting. Prior studies document that a negative recommendation by the leading proxy advisory firm, Institutional Shareholder Services (ISS), can reduce shareholder support by 25%.[29] More importantly, studies show that ISS can improve voting informativeness. Alexander et al. (2010) find that ISS recommendation is informative and predicts proxy contest outcome. Ertimur et al. (2013) document its economic role of processing substantial amount of governance information. Malenko and Malenko (2019) suggest that monopolistic proxy advisor can make voting more informative when its information is sufficiently precise. Despite burgeoning research interest in the relation between shareholders and ISS, little is known about how firms react to ISS' prominent role in voting information production.

In this paper, we examine whether firms, in anticipation of negative recommendation from ISS, selectively disclose positive information prior to shareholder meetings in an attempt to mitigate the potential adverse effect.[30] As stock price can incorporate important information about management performance ((Fama and Jensen (1983), and Holmström and Tirole (1993))), firms have an incentive to release positive information to boost voter confidence in incumbent management, especially when they expect unfavorable voting outcome that may engender negative real effects.[31] Consistent with this, our evidence suggests that discretionary disclosure by such firms tends to result in higher stock prices, which in turn are associated with greater support in management.

Studies documenting selective disclosure of good news either document patterns of stock price movements prior to events (Aboody and Kasznik (2000)) or examine stock price reaction of earnings announcements and management forecasts (Dimitrov and Jain (2011)). Some studies

[29] See Bethel and Gillan (2002), Choi et al. (2010), Alexander et al. (2010), Ertimur et al. (2013) and Malenko and Shen (2016).
[30] One cost to such selective disclosure may be that firms hastening the filing of discretionary good news to before the meeting have to push less positive discretionary disclosure to after the meeting.
[31] Cai et al. (2009) document that lower management support in director elections is associated with lower compensation and a greater likelihood of governance changes. Fos et al. (2018) and Aggarwal et al. (2019) document the effect of director elections on CEO turnover performance sensitivity and the careers of directors in question, respectively.

examine coverage in news wires, which are likely to be originated by firms, to shed light on how disclosure by firms impacts stock prices (e.g., Ahern and Sosyura (2014) and Edmans et al. (2018)). We add to this literature by studying 8-K, the "current report" that firms must file with the SEC in a timely manner to announce material events that shareholders should know about.[32] Lerman and Livnat (2010) document that 8-Ks constitute over half of all firm filings, and that they are associated with abnormal volume and significant stock price impact (Zhao (2017)). Ben-Rephael et al. (2017) study search data of 8-K filings to document its importance for institutional investors.

Examining 8-K filings has several advantages. It allows us to identify firm-initiated material disclosure rather than having to infer it from the nature of news coverage. Further, it allows us to discern whether the disclosure is voluntary or mandatory in nature based on the sections under which the firm discloses. This is important as the timing and nature of mandatory disclosure is not under a firm's control and attempts by firms to selectively disclose positive news is more likely to be achieved via discretionary sections. We use the [-3,+3] day cumulative abnormal return (CAR) around an 8-K filing to capture the selective disclosure of positive news. As we know the date of the 8-K disclosure, whether it was voluntary or mandatory, and its impact on stock prices, we can examine if firms choose the timing and content of 8-K filings to mitigate the pressure arising from expected negative recommendations from proxy advisors.

The following exemplifies the discretionary disclosure that we study. Odyssey Marine Exploration, a firm that received a negative ISS recommendation in the prior year, filed an 8-K on 4th April, 2011 disclosing that it had executed an agreement to provide marine services to client companies of Robert Fraser & Partners LLP (RFP). The filing was under Item 8.01 that covers "optional disclosure" that the firm deems important to shareholders. The 8-K announcement was associated with a 13.2% [-3,+3] day CAR. Odyssey's annual meeting was

[32] For further details, refer to the SEC website at https://www.sec.gov/fast-answers/answersform8khtm.html.

scheduled for June 1st and it received a 2% higher abnormal shareholder support for its proposals.[33]

Next, we characterize "voting pressure" on firms. Once anticipated, firms are under pressure to mitigate proxy advisor's adverse information production by changing the timing and nature of their own disclosure. We use past negative recommendation from ISS to capture this voting pressure on firms. Firms with a prior negative recommendation from ISS, and with a high likelihood of getting one this year (Calluzzo and Kedia (2020)), are likely to feel pressure to increase shareholder support in the upcoming shareholder meeting.[34] The indicator variable, *Negative ISS*, takes the value of one if the firm had at least one negative ISS recommendation on its management proposals in the prior meeting. We also use the fraction of management proposals voted in the prior annual meeting that had a negative recommendation from ISS, referred to as *Fraction Negative*, as an alternate proxy for voting pressure. Importantly, our measure of voting pressure using prior recommendation does not hinge on the actual ISS recommendation for the upcoming meeting. This is not only because the actual recommendation is probably endogenous to the upcoming meeting, but also because ISS usually discloses its proxy analysis and proxy recommendation only about 13 to 25 calendar days before the meeting, which is too short a time frame for firms to change their disclosure to influence the voting outcome.[35]

Our empirical methodology involves examining 8-Ks filed around shareholder meetings. Specifically, we compare the 8-Ks filed in the 90 days prior to the meeting, referred to as *Pre Period*, with those filed in the 90 days after, referred to as the Post Period. As most sections in

[33] Odyssey filed two other 8-K, both mandatory, in the three months prior to its annual meeting. The first, filed under item 5.02 on March 11, 2011 reported the appointment of a director and was associated with a -10.7% CAR. The second, filed under item 3.03 on April 20, 2011 reported a material modification to rights of security holders that allowed the firm concessions and was associated with +10.8% CAR. The 8-K filed after the meeting, that covered details about the annual meeting and reported the high shareholder support was associated with a 13.5% CAR. The firm also filed three 8-Ks in the three months after the annual meeting, all involving voluntary reporting with an aggregate CAR of -22.6%.

[34] In our sample, on average, if a firm receives (does not receive) at least one negative recommendation by ISS in the past meeting, it has a 55% (27%) chance of receiving negative recommendation for the current meeting.

[35] As stated in ISS policies and available at https://www.issgovernance.com/file/policy/us-policies-and-procedures-faq-feb-2017.pdf. At the height of the proxy season, in April through June, it is closer to 13 days. Timing also depends on complexity of agenda items and contentiousness of the issues.

Form 8-K are mandatory, firms may have little discretion on the timing and nature of the 8-Ks filed. However, disclosure under Section 7 (Item 7.01) and Section 8 (Item 8.01) allows for some managerial discretion and is likely to be used to disclose discretionary good news prior to shareholder meeting. All 8-Ks with filings under Items Section 7.01 and/or 8.01 are classified as *Discretionary* 8-Ks.[36] If firms under voting pressure selectively disclose "good news", the stock price reaction of the *Discretionary* 8-Ks filed prior to the shareholder meeting, that is in the *Pre Period*, should be higher than that of the *Discretionary* 8-K filings after meeting, that is the *Post Period*. We also examine tone of 8-Ks, since firms may use relatively more words with positive sentiment in disclosure as another way to garner investor support.

In our main analyses (Sections 4.1. and 4.2.; Tables 4 through 6), we employ a difference-in-difference approach to test differences in 8-K disclosure before and after the shareholder meeting of firms with voting pressure, and then compares this to the differences in disclosure for firms that do not have any voting pressure. The difference-in-differences estimate allows us to focus on the likely impact of voting pressure on the disclosure policy of firms.[37] The evidence suggests that firms' response to voting pressure only prevails in *Discretionary* 8-Ks that allow for flexibility in both the timing and nature of disclosure, and that firms use positive material information rather than tone management in discretionary disclosure to garner shareholder support.

Our sample consists of firms covered by the ISS RiskMetrics over the period from 2005 to 2015 and merged with 8-K filings from EDGAR using CIK. The final sample spans 23,893 shareholder meetings after merging with other datasets such as CRSP and Compustat. Though about 9% of all management proposals receive a negative recommendation from ISS, about 31% of meetings have at least one management proposal with a negative ISS recommendation. There are on average 3.6 8-Ks filed by sample firms in the *Pre Period*, of which 1.4 are classified as

[36] Disclosure under the other items is classified as mandatory. We discuss this later in Section 3.

[37] Alternatively, it could be argued that the firm choose to hold the shareholder meeting at a time where there is more mandatory good news. However, most firms have their annual meeting at the same time of the year as the last meeting. It may not be feasible or practical to hold an annual shareholder meeting within a few months of the last one or several months overdue from its anniversary, further limiting discretion around the timing of shareholder meeting.

*Discretionary* 8-Ks. Frequency of 8-Ks is similar in the *Post Period* with an average of 3.4 8-Ks and 1.4 *Discretionary* 8-Ks.

The average [-3,+3] CAR of 8-Ks filed prior to the shareholder meeting is higher than that of 8-Ks filed after the meeting, suggesting that disclosure for all firms is more positive prior to shareholder meetings. This difference in the stock price reaction to 8-Ks, between the *Pre Period* and *Post Period*, is primarily seen in *Discretionary* 8-Ks and is not significant for *Non-Discretionary* 8-Ks. This suggests that good news disclosed by firm prior to shareholder meetings is in the discretionary sections as opposed to the mandatory sections of 8-Ks.

Management may add discretionary disclosure under Section 7 or 8 along with other mandatory disclosure. Such *Mixed Discretionary* 8-Ks have been shown to bundle negative news from mandatory sections with more positive voluntary disclosure (Segal and Segal (2016)). In contrast, *Pure Discretionary* 8-Ks contain only disclosure under Section 7 or 8 and account for about 71.3% of all *Discretionary* 8-Ks. Though *Mixed Discretionary* 8-Ks have disclosure that is voluntary in nature, their timing is dictated by that of the mandatory disclosure. In contrast, *Pure Discretionary* 8-Ks offer more flexibility in the timing and nature of the disclosure. Consequently, we find that firms with voting pressure disclose positive news prior to meetings by filing *Pure Discretionary* 8-Ks. As all firms would like a present a positive picture to shareholders, all firms file positive discretionary content with mandatory filing, that is file positive *Mixed Discretionary* 8-Ks prior to meetings. These results hold after controlling for firm characteristics, meeting characteristics, and 8-K filing characteristics along with a host of fixed effects. In particular, we control for meeting fixed effects and 8-K item type fixed effects as disclosure under some sections may be more relevant than others. We also control for year fixed effects and firm fixed effects. Firm fixed effects control for the time invariant firm disclosure such as the propensity to file more or less 8-Ks, and readability of 8-Ks, among others. We continue to find that *Discretionary* 8-Ks, particularly *Pure Discretionary* 8-Ks, filed prior to a shareholder meeting are associated with more positive CARs for firms under voting pressure.

Results of difference-in-difference tests (Section 4.1.; Tables 4 and 5) suggest that firms anticipating adverse information production by ISS tend to disclose relatively more positive

information in *Discretionary* 8-Ks prior to a shareholder meeting than after the meeting. This does not imply that there are no negative disclosures prior to the meeting, or that there are no positive disclosures after the meeting as firms are unlikely to have discretion in the timing of mandatory disclosure. Rather, the results suggest that firms facing voting pressure choose to hasten the filing of discretionary good news to before the meeting and push less positive discretionary disclosure to after the meeting.

Using the difference-in-difference approach, we also examine *Tone* of the 8-K filings around shareholder meetings (Section 4.2.; Table 6). A positive *Tone* in earnings press releases and MD&A section of 10-K and 10-Q filings has been associated with positive market reactions (See Li (2010) for a survey)), and thus may serve as an additional way to gain shareholder votes. We find that all firms use more positive *Tone* for mandatory 8-Ks, but use fewer positive and fewer negative words, that is less extreme tone, in *Discretionary* 8-Ks filed prior to annual meetings. Additionally, there is no evidence that *Tone* of 8-Ks filed by firms with voting pressure prior to the meetings is more positive, which can be justified by the following. First, given that the use of positive *Tone* is relatively low cost and universally seen prior to shareholder meetings, and that negative ISS recommendations are usually based on hard facts or verifiable information about the firm (Ertimur et al. (2013)) such as profitability or CEO pay-for-performance, firms facing voting pressure resort to disclosing more positive material news, rather than merely presenting the disclosure in a more positive *Tone*. Second, in contrast to earnings releases and MD&A sections in 10-K and 10-Q statement, 8-K disclosure is more structured and offers less opportunity for managerial narrative, and it is thus less amenable for large variations in *Tone*. Finally, over-exploitation of *Tone* may incur litigation risks (Rogers et al. (2011)). Overall, we do not find evidence that firms under voting pressure use *Tone* to garner support.

We next examine if this selective disclosure of good news is indeed associated with higher shareholder support. We aggregate the stock price reaction of *Pure* and *Mixed Discretionary* 8-Ks filed by firms in the *Pre Period*, referred to as *Pure* and *Mixed CAR* respectively, to capture overall positive information in voluntary disclosures prior to the meeting.

We obtain shareholder support for the proposals and normalize this by the median support for the proposal type in the year, to create a measure of *Abnormal Shareholder Support*. Consistent with our hypothesis that firms under voting pressure use discretionary disclosure to counter anticipated adverse information production by ISS, higher *Pure* and *Mixed CARs* are both associated with significantly higher *Abnormal Shareholder Support*.

We use shareholder characteristics to perform cross-sectional tests. If the selective disclosure of "good" news prior to meeting is to garner higher shareholder support, it should be impacted by shareholder characteristics. We examine the impact of two shareholder characteristics, namely investor inattention and family ownership, on disclosure policy of firms under voting pressure. Hirshleifer and Teoh (2003) model the effect of limited investor attention on firm's disclosure policy, and show that greater investor inattention and an incentive to boost stock prices encourage firms to manipulate investor perceptions. This implies that firms facing voting pressure are likely to disclose better news prior to meeting if their investors are distracted. We construct three proxies for *Investor Inattention* and document that the propensity by firms under voting pressure to file more positive *Discretionary* 8-Ks in *Pre Period* increases with *Investor Inattention*. On the other hand, firms with significant family ownership are less likely to worry about anticipated negative information produced by ISS and its effect on shareholder support, making them less likely to engage in selective disclosure. Consistent with this, we find significantly lower *Pre Period* CARs of *Discretionary* 8-Ks filed by family firms than by their non-family counterparts under voting pressure.

We contribute to the emerging literature on proxy voting by showing that proxy advisory firms impact firm disclosure policy. Studies (e.g., Choi et al. (2010) and Malenko and Shen (2016)) find that voting recommendation by ISS, the leading proxy advisor firm, has significant impact on voting outcome. Other studies (e.g., Alexander et al. (2010), Ertimur et al. (2013), and Malenko and Malenko (2019)) document the role of proxy advisors in promoting voting informativeness. The results in this paper show how firms use discretionary disclosure to respond to anticipated negative recommendation by ISS, which may otherwise lead to not only unfavorable voting outcome but also negative real effects on incumbent management (e.g., Fos et

al. (2018)). Specifically, we find that firms expecting negative recommendation tend to disclose more positive content in discretionary sections of Form 8-K, and such selective disclosure is associated with voting outcome in favor of management. The results imply that though ISS can make voting more informative, firms can also release material information to guide voting, which extends shareholder's information set in voting and echoes in essence the new SEC regulation that builds a channel for firms to respond to negative recommendation issued by proxy advisors.[38]

Our results also contribute to the literature that documents selective disclosure of good news by firms. Prior literature has documented management influence in the timing and nature of disclosure. Studies show that firms selectively disclose good news prior to grant of stock options (Aboody and Kasznik (2000), vesting of stock options (Edmans et al. (2018)) and prior to CEOs going on vacations (Yermack 2014). Ahern and Sosyura (2014) find that bidders in stock mergers originate more news after the start of merger negotiations and before the public announcement in an attempt to increase the exchange ratio.[39] Dimitrov and Jain (2011) document that earnings announcements and management forecasts have higher announcement returns prior to annual meetings over the 1996 to 2005 period, while Brochet et al. (2021) document that investors' expectation of activism may also contribute to high pre-meeting returns. Our evidence suggests that firms selectively disclose positive news through the filing of *Discretionary* 8-Ks prior to meetings when faced with negative ISS recommendations, and that this selective positive disclosure is associated with a higher shareholder support.

The remainder of the paper is organized as follows. Section 2 reviews the related literature. Section 3 describes the data. Section 4 presents main empirical results. Section 5 examines the impact of discretionary disclosure on shareholder support. Section 6 focuses on cross-sectional tests. Section 7 concludes.

## 2. Literature Review

[38] https://www.sec.gov/rules/final/2020/34-89372.pdf.
[39] Several recent papers examine the strategic use of social media. Jung et al. (2018) document that firms are less likely to use Twitter to disseminate financial information if the news is bad.

### 2.1. Proxy Advisor

This paper is also related to large and growing literature on proxy voting. As discussed earlier a negative recommendation from ISS leads to a significant reduction in shareholder support. This reduction in shareholder support, though usually not sufficient for management proposals to fail, does have adverse real effects on CEO compensation (Cai et al. (2009)), CEO turnover-performance sensitivity (Fos et al. (2018)), and career concerns of directors (Aggarwal et al. (2019)). The impact of ISS recommendations on firms has generated a discussion on the costs and benefits of its impact. Larcker et al. (2015) and Iliev and Lowry (2015) argue that proxy advisors may take a "one size fits all" position on certain issues. However, other studies (Alexander et al. (2010), Ertimur et al. (2013), and Malenko and Malenko (2019)) find that poxy advisory firms play an important role in improving voting informativeness. We contribute to this literature by documenting that voting information production by ISS influences firms' disclosure policies. Specifically, firms selectively disclose good news to mitigate the impact of a potential negative ISS recommendation, which could result in adverse voting outcome and real effects.

### 2.2. Voluntary Disclosure

The paper is related to several strands of literature. There is a large literature on voluntary disclosure policies of firms that emphasizes the costs and benefits of voluntary disclosure (See Healy and Palepu (2001) and Beyer et al. (2010) for surveys). Several papers have examined the relation between equity incentives and the timing and nature of disclosure (See Aboody and Kasznik (2000), Yermack (2014), and Edmans et al. (2018)). Ahern and Sosyura (2014) find that bidders in stock mergers originate more news after the start of merger negotiations and before the public announcement in an attempt to increase stock price.[40] Whereas Ahern and Sosyura (2014) and Edmans et al. (2018) study news likely to be firm originated, that is coverage in news wires, we contribute by examining 8-Ks, which are material firm disclosures.

[40] Several recent papers examine the strategic use of social media. Jung et al. (2018) document that firms are less likely to use Twitter to disseminate financial information if the news is bad. Tsileponis et al. (2020) document the impact of firm voluntary disclosure on media coverage.

Dimitrov and Jain (2011) document stock price increase in the 40 days prior to the annual meeting over the 1996 to 2005 period related to positive earnings announcements and management forecasts.[41] We complement their analysis by examining 8-K filings that allow us to focus on the disclosure of salient discretionary news that encompass a larger set than management forecasts.[42] We are also able to exploit voting data available after 2005 to link the selective disclosure of discretionary news to voting pressures on the one hand, and to document the success of these "selective" disclosures in increasing shareholder support on the other.

### 2.3. Disclosure with 8-Ks

The paper is also related to an emerging literature that examines disclosure through 8-K filings. Lerman and Livnat (2010) document that 8-Ks constitute over half of all firm filings, and that disclosed items are associated with abnormal volume. Prior papers also document the materiality of 8-K filings, with Zhao (2017) documenting that information intensity of 8-Ks is associated with higher stock returns and Campbell et al. (2020) documenting the prevalence of insider trading prior to 8-K filings. Ben-Rephael et al. (2017) study institutions and retail searches of 8-Ks to shed light on the importance of 8-K for institutional investors. We contribute to this literature on the materiality and importance of 8-K disclosures by documenting their selective use in mitigating voting pressure.

## 3. Data

### 3.1. The Sample

Our sample consists of firms covered by the ISS RiskMetrics. We use ISS Voting Analytics to obtain data on meeting date, proposals voted, the number of votes obtained, and ISS voting recommendation over the time period 2005 to 2015. We merge the 8-K data from

[41] Brochet et al. (2021) suggest that such stock price increase may reflect investors' perceptions of future activism.
[42] Disclosure through 8-K is likely to be more objective and material on account of being regulated. Further, as documented by Ben-Rephael et al. (2017) 8-Ks are an important source of information for institutional investors who not only own a large fraction of the equity but are significantly more likely to exercise their voting rights. For example, in 2018 retail (institutional) investors owning about 35% (65%) of shares exercised 29% (84%) of their voting power. See https://proxypulse.broadridge.com.

EDGAR with the voting data based on historical CUSIP and Central Index Key.[43] We also merge the data with Beta Suite by WRDS, CRSP, Compustat, Thomson Reuters Institutional Holdings, MSCI GMI Ratings, and I/B/E/S to generate the final sample for our analyses. The final sample consists of 3,766 unique firms that span 23,893 shareholder meetings.

[Table 1 goes about here]

Table 1 presents descriptive statistics on the meetings over the sample period. A management proposal has a negative recommendation if ISS recommends voting against management.[44] The number of firms and meetings is relatively steady over the sample period. Though about 9.2% of the management proposals voted have a negative ISS recommendation, about 31.2% of the meetings have at least one proposal with a negative ISS recommendation.

### 3.2. Main Variables

Section 13 and 15(d) of the Securities Exchange Act of 1934 and Regulation FD require that material corporate events be reported on Form 8-K within four business days. Whereas most sections of Form 8-K require mandatory reporting of pre-specified events, disclosure under Sections 7 and 8 is more voluntary.[45] As the firm does not control the nature and timing of mandatory reporting, they may resort to Sections 7 and 8 to disclose good news with discretion prior to annual meetings. We identify all 8-Ks with disclosure under Section 7 and/or 8 as *Discretionary* 8-Ks.[46] Management may add discretionary disclosure under Section 7 and/or 8 along with other mandatory disclosure. Such *Mixed Discretionary* 8-Ks have been used to bundle

[43] We use linking table from CRSP/Compustat Merged database to help link datasets with different identifiers. In 2004, the SEC made significant changes to the reporting requirements of Form 8-K. In particular, the SEC increased the number of events that need to be reported and also reduced the time to disclose to four business days from the event. Therefore, the sample begins in 2005. Further details are available at https://www.sec.gov/rules/final/33-8400.htm.

[44] A recommendation of *Against, Withhold,* or *Abstain* by ISS for a management proposal are all classified as negative recommendations.

[45] Sections 1 through 6 are pre-specified event types that the firm is required to report within four business days. Section 9 serves as an appendix to other sections and is rarely disclosed without items in other sections. Item 7.01 of Section 7 covers Regulation FD related disclosure while Item 8.01 of Section 8 covers optional disclosure that firms deem important. See Appendix 1 for details of the mandatory sections.

[46] Several other papers use a similar classification for voluntary or discretionary disclosure through 8-Ks (e.g., He and Plumlee (2020)). A single 8-K can have information under several item numbers.

negative news from mandatory sections with more positive discretionary disclosure (Segal and Segal (2016)). Though *Mixed Discretionary* 8-Ks have disclosure that is voluntary in nature, their timing is dictated by that of the mandatory disclosure. In contrast, *Pure Discretionary* 8-Ks that contain only disclosure under Section 7 and/or 8 offer the most flexibility in the timing and nature of the disclosure.[47] We study all *Discretionary* 8-Ks as well as separate samples of *Mixed* and *Pure Discretionary* 8-Ks to examine whether management is likely to hasten the filing of good news and push back the filing of negative news to after the shareholder meetings in order to garner higher shareholder support for its proposals.

[Table 2 goes about here]

We extract the filing date of the 8-K, the date of the reported event (report date), and the item number of the information filed.[48] In line with Ben-Raphael et al. (2017) who document that institutional investors learn about the disclosure on event or report date which is also associated with the most price discovery, we use the report date as the relevant date.[49] As we study 8-K filings around the shareholder meeting, we extract all 8-Ks filed in the 90 days prior to the meeting, referred to as the *Pre Period*, and the 90 days after the meeting, referred to as the *Post Period*. As displayed in Table 2, the sample firm-years involve 113,021 8-Ks filed in the 180 days around shareholder meetings. Of these 8-Ks, 43.9% are classified as *Discretionary* 8-K with disclosure under Section 7 or 8. About 31.3% of the 8-Ks filed around shareholder meeting are classified as *Pure Discretionary* with only discretionary sections.

We estimate the cumulative abnormal returns around 8-K filings to capture the information content of the 8-K. Specifically, we estimate cumulative abnormal returns (CARs) over the [-3,+3] day window based on Fama-French-Carhart four-factor model. The average [-

[47] 8-Ks that contain Item 9.01 along with Item 7.01 or 8.01 are also classified as *Pure Discretionary* 8-Ks. Item 9.01 includes financial statements and exhibits, and cannot standalone in an 8-K.

[48] We remove 8-Ks with only Item 5.07 because it reports the voting outcome of the meeting and should not belong to either *Pre Period* or *Post Period*. We also remove 8-Ks filed within 6 days of a 10-K or 10-Q filing, as the CAR window has other material events and is a noisy measure of the 8-Ks' impact.

[49] Firms have four business days to file material events. In our sample, the average number of calendar days between the event (that is the report date) and the filing date is about 1.6 days. We use the report date to calculate the stock price reaction. However, in untabulated robustness tests, we also estimate stock returns around filing date and able to obtain qualitatively similar results.

3,+3] CAR around 8-K filings is 0.257% in our sample. The 8-Ks are material filings with a significant market reaction that can be either negative or positive, and thus it is not surprising that the overall mean return is small. The average absolute CAR is 4.83%, underscoring the fact that 8-Ks are material disclosures with a significant (either positive or negative) market reaction.

We also calculate the number of positive and negative words in an 8-K based on word list from The Notre Dame Software Repository for Accounting and Finance (SRAF).[50] *Tone* is defined as the difference between the number of positive and negative words divided by the total number of 8-K words that appear in the Loughran-McDonald Master Dictionary. The average *Tone* is -0.007%. We also examine the number of positive and negative words separately, as Gurun and Butler (2012) and Kothari et al. (2009) document differences in the propensity to use negative and positive words.

To gauge voting pressure, we create a proxy for the voting pressure faced by firms. A firm that receives a negative recommendation from ISS in the prior year has a higher likelihood of getting another negative recommendation from ISS in the following year (Calluzzo and Kedia (2020)). In our sample, firms with a prior negative recommendation from ISS are twice more likely (55% vs. 27%) to get a negative ISS recommendation in the upcoming meeting relative to firms with no negative ISS recommendation last year. The indicator variable, *Negative ISS*, takes the value of one if the firm had at least one negative ISS recommendation in the prior year, and zero otherwise. As seen in Panel C of Table 2, 31.5% of the meetings are characterized as facing voting pressure, that is they expect adverse information production by ISS. To capture the intensity of the pressure, we use *Fraction Negative*, which is the ratio of management proposals with a negative ISS recommendation in the prior meeting.

[Table 3 goes about here]

Approximately half of the 8-Ks are filed in the 90 days prior to annual meetings, that is in the *Pre Period*, with an average [-3,+3] CAR of 0.306%, which is significantly higher than the CAR of 0.206% for 8-Ks filed in the *Post Period* (Panel A of Table 3). This difference between

[50] Available at https://sraf.nd.edu/textual-analysis/resources/#LM%20Sentiment%20Word%20Lists.

the 8-Ks filed before and after shareholder meetings is mainly driven by the *Discretionary* 8-Ks, as there is no difference in the average CARs filed before and after the meetings for *Non Discretionary* 8-Ks. This is consistent with firms having little flexibility in timing the disclosure of mandatory events.

This proclivity to disclose good news before the shareholder meeting by filing positive *Discretionary* 8-Ks should be further heightened if the firm faces voting pressure. As seen in Panel B, the difference between *Pre Period* and *Post Period* CAR for *Discretionary* 8-Ks doubles for firms facing voting pressure. In line with our hypothesis, the firms that face voting pressure are more likely to disclose good news through filing of *Discretionary* 8-Ks in the days leading up to the shareholder meeting.

[Figure 1 goes about here]

Fig. 1 plots mean CAR and *Tone* of *Discretionary* 8-Ks around annual meetings.[51] The patterns confirm the above findings that firms under voting pressure tend to disclose positive information in discretionary sections of 8-Ks, at the cost of less positive information in discretionary filings in *Post Period*. However, *Tone* of 8-Ks is higher in *Pre Period* even if the firm is under no voting pressure from ISS.[52]

## 4. Main Analyses

### 4.1. CAR Analyses

The above results show in a univariate setting that *Discretionary* 8-Ks filed by firms facing voting pressure prior to the shareholder meeting are associated with higher CARs relative to those filed after the meeting. In this section, we control for other factors that are likely to affect the stock price reaction to the 8-Ks filed by the firm. Specifically, we estimate the following regression:

$$CAR = \beta_0 + \beta_1 PrePeriod + \beta_2 Voting\ Pressure + \beta_3 PrePeriod\ x\ Voting\ Pressure + \gamma Control\ Variables + e$$

[51] We thank an anonymous referee for commending a graphical illustration of our main results.
[52] We discuss patterns observed in *Tone* of 8-Ks in Section 4.2.

Each observation in the above estimation is an 8-K filed by sample firms in the 180 days around the meeting. As discussed before, *Pre Period* is a dummy variable that takes the value of one in the 90 days prior to the meeting and *Voting Pressure* is a dummy variable that takes the value of one if the firm faces voting pressure. $\gamma$*Control Variables* represents control variables and their respective coefficients. The coefficient of interest is $\beta_3$, which captures the increase in the incentive to disclose positive content in *Discretionary* 8-Ks by firms with voting pressure prior to shareholder meetings.

We include several variables to control for other factors that might impact stock returns around 8-K filings. First, we include the characteristics of the current meeting that might also influence the timing and information content of the 8-Ks filed. Specifically, we include *Current Negative ISS*, which is an indicator variable that takes the value of one if the current meeting has a management proposal that has received a negative recommendation from ISS. We also include an indicator variable, referred to as *Shareholder Proposal*, if the current meeting has a shareholder proposal. Firms may be more inclined to file positive 8-Ks to generate support against shareholder proposals.

We include characteristics of the 8-Ks that are likely to impact the stock price reaction to its filing. We include the number of days from last 8-K filed by the same firm, referred to as *Gap Last*. An 8-K filed in quick succession of a previous 8-K is likely to be less informative and hence has a lower stock price reaction. *Number Items* is the number of items disclosed in the 8-K, as 8-K with more items is likely to be more informative with a larger stock price reaction. Alternatively, if good news in some sections is bundled with negative news in other 8-Ks with more items may have lower and close to zero stock price reaction. For firm level characteristics, we follow corporate governance studies (e.g., Lei and Zhang (2016), and Goergen et al. (2020)) in which the main dependent variable is based on 8-K filings to include size, leverage, and Tobin's Q. We also follow studies on 8-K disclosure to include ROA and number of analysts following the firm (Gleason et al. (2020)), as well as institutional ownership in the firm

(McMullin et al. (2018)).[53] These firm characteristics are measured in the year prior to the meeting, and all continuous variables are winsorized at the 1% and 99% levels. Detailed description of all variables is in Appendix 2.

We also include several fixed effects. First, we include firm fixed effects that control for time invariant firm characteristics such as visibility or liquidity that may impact the stock price reaction to its regulatory filings. We also include year fixed effects to control for time trends in the capital markets. We include 8-K item type fixed effects as some 8-K items may contain more material events than others. Lastly, we include meeting type fixed effects as special shareholder meetings may be more contentious than annual shareholder meetings.[54] Standard errors in all estimations are clustered at the firm level.

[Table 4 goes about here]

As we expect firms to primarily use voluntary disclosure to selectively disclose positive news prior to meetings, we estimate the model separately in a sample of *Discretionary* and *Non Discretionary* 8-Ks. Results are displayed in Panel A and Panel B of Table 4. The coefficient of the interaction between *Voting Pressure* and *Pre Period* is positive and significant for *Discretionary* sample, implying that 8-Ks filed before the meeting by firms that face voting pressure have more positive information as they are associated with significantly higher CARs. The results are similar for both proxies of *Voting Pressure*, as seen in Model 1 and 2 of Panel A.[55] The coefficient of *Voting Pressure* is negative but not significant suggesting that *Discretionary* 8-Ks filed by firms facing voting pressure after the meetings tend to be negative though not significantly so. The coefficient of *Pre Period* is positive and significant in Model 2

[53] In an untabulated robustness test, we use an alternative set of firm level variables from the literature on disclosure and stock returns (e.g., Dong et al. (2021)), namely size, firm age, cash, intangibles, ROA, leverage, and sales growth, and find that our baseline results are qualitatively similar. We thank an anonymous referee for suggesting a more thorough discussion on firm-level control variables.

[54] The sample consists of annual meetings, special meetings and proxy contests. As the voting pressure is likely to be higher for special meetings and proxy contests, we include them in the sample and create an indicator to capture its potential impact on the CAR. There are 31 categories of item fixed effects, as listed in SEC description of 8-K categories in the Appendix 1.

[55] The interaction is economically significant: the coefficient of 0.866 in Model 2 indicates that a one standard deviation increase in the voting pressure, that is an increase of 0.188 leads to an increase of 0.163 percentage points (0.866*0.188) in CARs.

when we use *Fraction Negative* to capture voting pressure pointing to the incentives of all firms to file more positive *Discretionary* 8-Ks prior to shareholder meetings.

The coefficients for the control variables are as expected. Firm characteristics are important – larger firms and those with higher Tobin's Q have smaller market reactions, while those with higher leverage have higher market reactions. There is no significant impact of proposal characteristics to be voted at the current meeting on the 8-K market reaction. This is not surprising as many 8-Ks are filed before ISS releases recommendations on the proposals to be voted. The time from previous 8-K filed or the number of items in the 8-K also does not have a significant impact on the stock price reaction to the 8-K.

Whereas we expect firms to use *Discretionary* 8-Ks to selectively disclose positive information prior to shareholder meetings, such flexibility may not exist for disclosures mandated by the SEC and reported under other sections of the 8-K. In line with this, there is no evidence that firms with voting pressure are able to file systematically more positive *Non-Discretionary* 8-Ks prior to shareholder meetings. However, the firm level characteristics that influence the stock price reaction to *Non-Discretionary* 8-Ks continue to be similar to those for the *Discretionary* 8-K sample, suggesting that, other than the nature of disclosure, there is no significant difference between the two types of 8-Ks.

[Table 5 goes about here]

To understand the role of *Mixed* and *Pure Discretionary* 8-Ks, we separate *Discretionary* 8-Ks into the two respective subsamples. As *Mixed Discretionary* 8-Ks offer lower flexibility as the timing and content are constrained by the accompanying mandatory disclosure, they are less likely to be used by firms under voting pressure for selective positive disclosure. As seen in Table 5, we find that the coefficient of the interaction of *Pre Period* with *Voting Pressure* is significant only for *Pure* and not for *Mixed Discretionary* 8-Ks. However, as seen in Panel B, the coefficient of *Pre Period* is positive and significant for the sample of *Mixed Discretionary* 8-Ks but not for the *Pure Discretionary* 8-Ks. All firms, irrespective of voting pressure tend to add positive discretionary content to mandatory disclosures that result in *Mixed Discretionary* 8-Ks

with positive returns prior to meetings and hence the coefficient of *Pre Period* is positive and significant for *Mixed* 8-Ks. Firms with voting pressure looking to selectively disclose good news, over and above what all firms do, file more positive 8-Ks with purely discretionary sections. The estimated coefficient is also economically significant as moving from no voting pressure to having voting pressure, that is from not having any to having at least one prior negative ISS recommendation, entails filing *Pure Discretionary* 8-Ks with 0.455 percent higher abnormal stock return. As the unconditional CAR for *Pure Discretionary* 8-Ks is 0.243 percent, voting pressure is associated with almost double the abnormal stock price reaction of *Pure Discretionary* 8-Ks filed prior to annual meetings.

[Figure 2 goes about here]

However, it is still possible that firms with voting pressure are inherently different from firms that never experience such pressure, which could be an alternative explanation of our finding. To rule out this possibility, we plot changes in CARs around meetings for firms before and after treatment of voting pressure. As shown in Fig. 2, prior to treatment, difference in CAR around meetings (*DiffCAR*) in *Treat* firms is similar to that in *Control* firms, alleviating the concern that firms tend to disclose more positive content in *Discretionary* 8-Ks even without voting pressure.[56]

Overall, there is no evidence that *Non-Discretionary* 8-Ks are more positive prior to shareholder meetings. Firms use discretionary sections for selective positive disclosure, with all firms adding positive discretionary sections to mandatory disclosure prior to shareholder meetings. However, it is firms under voting pressure that file *Pure Discretionary* 8-Ks with strong positive content prior to shareholder meetings.

### 4.2. Tone Analyses

Several papers examine the tone of disclosures and study its impact on market prices. Specifically, papers have documented that positive tone of earnings press releases and conference calls is associated with positive market reactions (See Li (2010) for a survey)). Prior

[56] We thank an anonymous referee for suggesting us checking parallel trend assumption.

literature also studies tone of regulatory filings, such as MD&A section in 10-K and 10-Q filings, which has an impact on market prices (e.g., Li (2010) and Feldman et al. (2010)). Though both earnings press releases and MD&A section of 10-K and 10-Q allow managers to communicate firm performance in a narrative form, Davis and Tama-Sweet (2012) document that managers do not use the same level of positivity for earnings releases and MD&A section. In contrast to earnings releases and MD&A, disclosure in 8-K filings is more structured, concise and regulated than managerial interpretation of firm performance, making 8-Ks possibly less amenable to tone changes.[57] We examine if and how *Tone* of 8-Ks varies around shareholder meetings.

[Table 6 goes about here]

As noted earlier, *Tone* is the number of positive words minus the number of negative words as a proportion of all words. We examine if the *Tone* of the 8-Ks filed in *Pre Period* by firms facing voting pressure is more positive (See Table 6). We find no evidence of positive *Tone* prior to shareholder meeting for firms with voting pressure in a sample of *Non Discretionary* 8-Ks (See Column 1), or in a sample of *Discretionary* 8-Ks (Column 2) or *Pure Discretionary* 8-Ks (Column 3). There is some evidence that *Tone* of *Non-Discretionary* 8-Ks is more positive in *Pre Period* for all firms.

We examine the number of positive and negative words separately, to see if negative tone in some parts of the 8-Ks is mitigated by significantly higher usage of positive words in other parts. As can be seen in Models 4 and 5, all firms use fewer positive and fewer negative words prior to annual meetings in their *Discretionary* 8-Ks. Firms with voting pressure do not differ from others in their use of positive or negative words.

Characteristics of the 8-K have an impact on *Tone*. The greater is the time from the prior 8-K, the more positive is the *Tone* of the 8-K. Additionally, the greater the number of items filed, the more negative the *Tone*, except for *Discretionary* 8-Ks, for which greater number of items is associated with more positive tone, suggesting bundling of positive and negative news. All specifications reported in Table 6 use *Negative ISS* to capture voting pressure. The results are

[57] The average (median) file size of 8-K from 2005 to 2015 is about 475 (56) kilobytes, while the average (median) of 10-K and 10-Q is 3831 (916) kilobytes.

similar when we use *Fraction Negative* to proxy for voting pressure and these results have not been tabulated for brevity.

Overall, the evidence suggests that all firms use positive *Tone* in their mandatory 8-K filings prior to shareholder meetings. Given that use of positive *Tone* is relatively low cost and is universally seen prior to shareholder meetings, and that determinants of negative ISS recommendations are usually hard facts or verifiable information about the firm (Ertimur et al. (2013)) such as profitability or CEO pay-for-performance, firms facing voting pressure resort to disclosing more positive material news, rather than just presenting the disclosure in a more positive tone. The results also suggest that all firm use less extreme words in the *Discretionary* 8-Ks filed prior to the shareholder meetings. This is consistent with the more formal and structured 8-K disclosure, leaving less room for variation in *Tone*. Further, optimistic tone in these filings may generate regulatory scrutiny and may also lead to shareholder litigation. Rogers et al. (2011) document that firms with positive and optimistic tone are more likely to be subject to litigation. Combined with the CAR results, the evidence suggests that firms anticipating adverse information production by ISS disclose more substantial news that has a larger and more positive stock price impact to boost investor confidence in incumbent management.

**5. Shareholder Support**

The results so far document that firms facing voting pressure are more likely to file *Pure Discretionary* 8-Ks with good news and all firms are more likely to file positive *Mixed Discretionary* 8-Ks in the 90 days prior to shareholder meetings. In this section, we examine if these 8-K filings with more positive information are associated with easing of the voting pressure. Specifically, we examine if more positive disclosure prior to the shareholder meeting is associated with higher shareholder support for its management proposals, which implies that shareholders take both ISS and management information into account.

As firms may file more than one *Discretionary* 8-Ks, we aggregate the stock price response of all *Discretionary* 8-Ks filed to capture the discretionary "good" news released in the days before the shareholder meeting. To understand the effect of *Pure* and *Mixed Discretionary* 8-Ks, we calculate *Pure CAR* as the sum of the abnormal stock price reaction of all *Pure*

*Discretionary* 8-Ks filed in *Pre Period*, and takes the value of zero for firms that do not file any *Pure Discretionary* 8-K. In a similar vein, *Mixed CAR* is the sum of abnormal stock price reaction of all *Mixed Discretionary* 8-Ks filed by firms in *Pre Period*. The higher the value of *Pure CAR* and *Mixed CAR*, the more positive the discretionary information released by the firm in the months prior to the meeting.

We capture shareholder support for a proposal by the proportion of "For" votes the management receives on its recommendations. Proposals differ in the level of shareholder support they receive, with some proposal types receiving more support than others. For example, compensation proposals receive less support on average (about 90.7% average support) compared with ratification of auditors (98.4% average support). The variable *Abnormal Support* normalizes the voting support on a proposal by the median support for that proposal type in that year.[58]

We then examine the effect of *Pure CAR* and *Mixed CAR* on the *Abnormal Support* for the proposal. The largest impact on the level of support from shareholders is likely to be ISS recommendations for the current meeting. A negative recommendation from ISS (contentious management proposal) is not only going to reduce the level of shareholder support, but also likely to dominate other factors that might influence shareholding voting. We therefore separate the sample into management proposals with a negative recommendation from ISS and those without. We control for stock returns by including buy and hold abnormal returns in the prior year as firms with higher stock returns are likely to get higher support from shareholders. As *Pure CAR* and *Mixed CAR* capture the impact on stock returns attributable to voluntary disclosure in the 90 days preceding the meeting, we subtract these from the buy and hold returns (referred to as *BHAR Prior*).

We include an indicator variable if there is a shareholder proposal being voted in the meeting as these may influence support for management proposals. We also include *Negative ISS* to capture meetings of firms with a negative recommendation from ISS in the prior year as this may continue to impact shareholder support in the following year. Firm characteristics included

[58] Specially, *Abnormal Support* is the difference between the proportion of "For" votes on a management proposal and the median "For" proportion for all proposals of the category in the year.

in prior estimations were also included. Finally, we also include firm and year fixed effects to control for any time invariant shareholder support enjoyed by some firms and years when there is greater shareholder discontent regarding certain governance issues. Though we have normalized the shareholder support for proposal type, we also include proposal type fixed effects and meeting type fixed effects. The sample includes all management proposals voted by firms in our sample.

[Table 7 goes about here]

For proposals with a positive recommendation from ISS, shareholder support is usually not a problem and there is no significant impact of discretionary disclosure in the 90 days prior to shareholder meetings as both the coefficient of *Pure CAR* and *Mixed CAR* are positive though not significant (See Column 1 in Panel A of Table 7). Firm performance over the year, as captured by *BHAR Prior*, is positively associated with support. Firm performance, as captured by ROA also positively impacts shareholder support. The coefficient of *Negative ISS* is negative and significant suggesting that though the proposal is not conflicted, the negative ISS recommendation for the firm from last year continues to impact the voting patterns of shareholders. The coefficient of *Shareholder Proposal* is also negative and significant. Management proposals at meetings where shareholder proposals are being voted experience lower shareholder support.

The picture is different for proposals that have a current negative recommendation from ISS (Column 2). The coefficients of both *Pure CAR* and *Mixed CAR* are positive and significant while overall firm performance, captured by *BHAR Prior* or *ROA*, is not significant. Higher institutional ownership is associated with lower shareholder support, as many institutions vote in line with ISS recommendations. In the sample of contentious proposals, with a negative ISS recommendation, the positive content of voluntary disclosure in the 90 days prior to the meeting, as captured by *Pure* and *Mixed* CAR, is significant in increasing shareholder support. This suggests that investors use discretionary disclosure from management under voting pressure to expand their voting information set, in addition to information produced by ISS.

Many firms do not file any *Discretionary* 8-K in the 90 days prior to the meetings. In Panel B, we restrict the sample to proposals from firms that file at least one *Pure* and *Mixed Discretionary* 8-Ks in *Pre Period*. The results are qualitatively similar as there is no significant effect of discretionary disclosure on shareholder support for proposals with a positive ISS recommendation. However, discretionary disclosure is significant for contentious proposals. As seen in Column 4, the coefficient of *Pure CAR* is positive and significant, though the coefficient of *Mixed CAR*, is positive but not significant. Within the sample of proposals with both kinds of *Discretionary* 8-Ks, the positive disclosure from *Pure Discretionary* 8-Ks has a stronger effect on shareholder support than from *Mixed Discretionary* 8-Ks. Overall, the evidence shows that positive information conveyed by *Discretionary* 8-Ks in the 90 days prior to the shareholder meetings is likely taken into account by shareholders, and thus associated with significantly higher shareholder support for contentious management proposals.

## 6. Shareholder Characteristics and the Impact on Disclosure

The evidence shows that firms facing voting pressure are more likely to file value-increasing *Discretionary* 8-Ks in the 90 days prior to the meeting. If the purpose of this selective disclosure is to generate higher support for management from shareholders in the upcoming meeting, then it should vary with shareholder characteristics. Selective disclosure should be higher when firms under voting pressure attract attention of shareholders that are distracted, and lower when shareholder support is less important. In this section, we examine if selective disclosure prior to meetings varies with the shareholder characteristics.

### 6.1. Investor Inattention

Management looking to garner higher shareholder support through selectively disclosing good news prior to the meeting is likely to target institutional investors. Holding a substantial fraction of equity, some of institutional investors have the resources to research proposals and vote independently of ISS recommendations (e.g., Iliev and Lowry (2015)). However, institutional characteristics vary and if institutional investors have a large portfolio, they may be distracted with their other holdings. Hirshleifer and Teoh (2003) model the effect of limited

investor attention on firm's disclosure policy, and show that greater investor inattention and an incentive to boost stock prices encourage firms to manipulate investor perceptions.[59] This implies that firms with more inattentive investors and voting pressure are more likely to engage in selective disclosure prior to meetings.[60]

Institutional investors that have several portfolio holdings are likely to be inattentive because they are under pressure to monitor all portfolio firms and thus may be resource constrained. The first measure of investor inattention, referred to as *Investor Inattention Avg,* is the average number of important portfolio firms held by all institutional investors in the firm in the quarter prior to a shareholder meeting. A portfolio firm is classified as important if the institution owns more than 1% of the firm. The greater is the value of *Investor Inattention Avg*, the more preoccupied and distracted the firm's institutional investors. The second measure, referred to as *Investor Inattention Fraction*, is the ratio of the number of most distracted investors to the total number of investors in the firm in the quarter prior to a meeting. The most distracted investors are those in the top quartile for the number of other important portfolio firms held in a year. The third measure, *Investor Inattention Ownership*, is the fraction of total institutional ownership that belongs to most distracted institutional investors in the quarter prior to the meeting.[61] We then examine if a firm under voting pressure is more likely to disclose good news before a shareholder meeting when investor inattention is high.

[Table 8 goes about here]

Investor Inattention significantly impacts the stock price reaction to an 8-K, irrespective of when the 8-K is filed. As seen in Table 8, the coefficient of *Investor Inattention* is positive and significant for all the three proxies. When institutional investors are distracted, the 8-Ks are

[59] For further details, refer to Proposition 2 of Hirshleifer and Teoh (2003).

[60] There is a large literature that documents that investor inattention it associated with under or overreaction to news. As we examine strategic disclosure by a firm, we focus on the effect of limited investor attention on firm's disclosure choices as modeled by Hirshleifer and Teoh (2003), rather than on its impact on stock prices or institutional search.

[61] For robustness we create an alternative measure of distraction in which we focus on portfolio firms of institutional investors that also face voting pressure, that is have a prior negative recommendation from ISS. Using voting pressure rather than 1% ownership in portfolio firms we reconstruct the above three methods and find qualitatively similar results. We have not tabulated these for brevity.

associated with higher stock price reactions. The coefficient of the triple interaction of *Investor Inattention* with *Voting Pressure* and *Pre Period* is positive and significant for all specifications. This propensity to file 8-Ks associated with more positive returns is significantly higher for firms with voting pressure in the period prior to the meeting when investors are distracted. In line with our hypothesis, the evidence suggests that firms take into account the characteristics of their institutional investors when they selectively disclose good news to mitigate anticipated adverse voting information production by ISS.

### 6.2. Family Ownership

Whereas, firms are more likely to disclose good news to compete for the attention of distracted institutional investors, they are likely to feel much less pressure to influence voting if the firm has family ownership and family support for its proposals. As the family has significant ownership, its support wanes the importance of winning the vote of other shareholders. Firms with family ownership that anticipate negative information production from ISS are likely to be less concerned about disclosing good news prior to the meeting to garner higher shareholder support (See Villalonga and Amit (2009)).

We use GMI Ratings to identify family firms. A firm is classified as a *Family Firm* if the founder or family members (one or two generations from the founder) are top executives (CEO or Chairman) in the firm and hold high ownership (greater than 20%).[62] About 17.24% of the sample firms are classified as family firms. We include an indicator variable for *Family Firms* and its interactions with *Pre Period* and voting pressure to examine the effect of family ownership on selective disclosure.

[Table 9 goes about here]

In line with prior results, the coefficient of interaction of *Pre Period* with *Voting Pressure* is positive and significant. However, the coefficient of the triple interaction of *Pre*

[62] We follow definitions of family firm and founder firm provided by GMI Ratings. We require firm age to be at least 5 years to mitigate concerns about the disclosure policy of very young firms. We use *CompanyAge*, also from MSCI GMI Ratings to measure the number of years a company has been in business.

*Period*, *Voting Pressure*, and *Family Firms* is negative and significant, suggesting that family firms are significantly less likely than others to selectively disclose good news prior to meetings (See Table 9). The results are consistent with better quality of earnings-related disclosure in family firms compared with non-family counterparts (Ali et al. (2007) and Chen et al. (2008)).

## 7. Conclusion

The evidence in the paper shows that firms voluntarily disclose good news in 8-K filings prior to shareholder meetings. This selective disclosure of good news prior to meetings is significantly higher when firms anticipate adverse information production from ISS, that is when firms receive a negative recommendation in the prior year. Firms with voting pressure looking to garner higher shareholder support release good news in discretionary sections of 8-Ks. We also find that such positive discretionary disclosure influences shareholder voting, as evidenced by the higher shareholder support for management proposals. Finally, the tendency to disclose such good news is higher (lower) when shareholders are inattentive (supportive).

The results in the paper inform the policy discussions on the role of proxy advisors by showing that their recommendation, especially the anticipated adverse information production associated with it, may trigger changes in disclosure policy of firms. The significant reduction in shareholder support that accompanies a negative recommendation by proxy advisors prompts many firms to selectively disclose positive information prior to meetings in an effort to mitigate such probable adverse effect on incumbent management. The results also show that management has some discretion in the content and timing of 8-Ks, and that it uses its discretion to mitigate anticipated negative information production by proxy advisors.

## Author statement

Declarations of interest: none.

Work described has not been published previously and is not under consideration for publication elsewhere. Additionally, submission to the journal is approved by all authors. If accepted the work will not be published anywhere else in the same form without the consent of the copyright-holder.

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**Appendix 1: SEC description of 8-K categories**

| Item name | SEC description |
|---|---|

| | |
|---|---|
| **Section 1** | **Registrant's Business and Operations** |
| **Item 1.01** | Entry into a Material Definitive Agreement |
| **Item 1.02** | Termination of a Material Definitive Agreement |
| **Item 1.03** | Bankruptcy or Receivership |
| **Item 1.04** | Mine Safety - Reporting of Shutdowns and Patterns of Violations |
| | |
| **Section 2** | **Financial Information** |
| **Item 2.01** | Completion of Acquisition or Disposition of Assets |
| **Item 2.02** | Results of Operations and Financial Condition |
| **Item 2.03** | Creation of a Direct Financial Obligation or an Obligation under an Off-Balance Sheet Arrangement of a Registrant |
| **Item 2.04** | Triggering Events That Accelerate or Increase a Direct Financial Obligation or an Obligation under an Off-Balance Sheet Arrangement |
| **Item 2.05** | Costs Associated with Exit or Disposal Activities |
| **Item 2.06** | Material Impairments |
| | |
| **Section 3** | **Securities and Trading Markets** |
| **Item 3.01** | Notice of Delisting or Failure to Satisfy a Continued Listing Rule or Standard; Transfer of Listing |
| **Item 3.02** | Unregistered Sales of Equity Securities |
| **Item 3.03** | Material Modification to Rights of Security Holders |
| | |
| **Section 4** | **Matters Related to Accountants and Financial Statements** |
| **Item 4.01** | Changes in Registrant's Certifying Accountant |
| **Item 4.02** | Non-Reliance on Previously Issued Financial Statements or a Related Audit Report or Completed Interim Review |
| | |
| **Section 5** | **Corporate Governance and Management** |
| **Item 5.01** | Changes in Control of Registrant |
| **Item 5.02** | Departure of Directors or Certain Officers; Election of Directors; Appointment of Certain Officers; Compensatory Arrangements of Certain Officers |
| **Item 5.03** | Amendments to Articles of Incorporation or Bylaws; Change in Fiscal Year |

| | |
|---|---|
| **Item 5.04** | Temporary Suspension of Trading Under Registrant's Employee Benefit Plans |
| **Item 5.05** | Amendment to Registrant's Code of Ethics, or Waiver of a Provision of the Code of Ethics |
| **Item 5.06** | Change in Shell Company Status |
| **Item 5.07** | Submission of Matters to a Vote of Security Holders |
| **Item 5.08** | Shareholder Director Nominations |
| | |
| **Section 6** | **Asset-Backed Securities** |
| **Item 6.01** | ABS Informational and Computational Material |
| **Item 6.02** | Change of Servicer or Trustee |
| **Item 6.03** | Change in Credit Enhancement or Other External Support |
| **Item 6.04** | Failure to Make a Required Distribution |
| **Item 6.05** | Securities Act Updating Disclosure |
| | |
| **Section 7 or 8** | **Regulation FD or Other Events** |
| **Item 7.01 or 8.01** | Regulation FD Disclosure or Other Events |
| | |
| **Section 9** | **Financial Statements and Exhibits** |
| **Item 9.01** | Financial Statements and Exhibits |



**Appendix 2: Variable definitions**

This tables describes all the variables used in the empirical estimation.

| Variables | Definition | Source |
|---|---|---|
| CAR | The [-3,+3] day Fama-French-Carhart four factor adjusted cumulative abnormal return around the 8-K conformed period of report | CRSP and WRDS Beta Suite |
| Tone | The ratio of the difference between number of positive words in the Loughran-McDonald list and that of negative words to the number of total words appeared in the Loughran and McDonald Master Dictionary | EDGAR and SRAF |
| Positive (Negative) Words | Number of positive (negative) words as a proportion of total words appeared in the Loughran and McDonald Master Dictionary | EDGAR and SRAF |
| Vote Support | The difference between the ratio of "For" votes of a management proposal and the median ratio of the proposal type-year | ISS Voting Analytics |
| Abnormal Support | The difference between Vote Support and the median vote support for the proposal type in the year | ISS Voting Analytics |
| Negative ISS | Indicator of whether the firm received at least one negative recommendation on management proposals from ISS in the previous meeting | ISS Voting Analytics |
| Fraction Negative | The ratio of the number of proposals with negative ISS recommendation over the total number of management proposals in the previous meeting | ISS Voting Analytics |
| Pre Period | Indicator of whether the 8-K conformed period of report date is within 90 days before the meeting date | CRSP and ISS Voting |

| | | |
|---|---|---|
| | | Analytics |
| Discretionary 8-K | Indicator of whether the 8-K contains Item 7.01 or Item 8.01 (other items are allowed) | EDGAR |
| Mixed Discretionary 8-K | Indicator of whether the 8-K contains Item 7.01 or Item 8.01 along with other sections | EDGAR |
| Pure Discretionary 8-K | Indicator of whether the 8-K contains only Item 7.01 or Item 8.01 (along with item 9.01) | EDGAR |
| Mixed CAR | Sum of CAR for all Mixed Discretionary 8-K filed in the Pre Period | CRSP and WRDS Beta Suite |
| Pure CAR | Sum of CAR for all Pure Discretionary 8-K filed in the Pre Period | CRSP and WRDS Beta Suite |

**Control variables**

| | | |
|---|---|---|
| Shareholder Proposal | Indicator of whether the current meeting includes at least one shareholder proposal | ISS Voting Analytics |
| Current Negative ISS | Indicator of whether a particular proposal receives a negative ISS recommendation | ISS Voting Analytics |
| Gap Last | The number of calendar days between an 8-K and the closest 8-K filed by the firm in the past | EDGAR |
| Number Items | The number of unique items in an 8-K | EDGAR |
| Size | Natural logarithm of total assets, measured at previous fiscal year-end | Compustat |
| Leverage | Book value of debt over total assets, measured at previous fiscal year-end | Compustat |

| | | |
|---|---|---|
| Tobin's Q | The summation of market value of equity and book value of debt, divided by the summation of book value of equity and book value of debt, measured at previous fiscal year-end | Compustat |
| ROA | Net income over lagged total assets measured at previous fiscal year-end | Compustat |
| Number of Analysts | The number of analysts covering the firm, measured at previous year-end | I/B/E/S |
| Institutional Ownership | Institutional ownership measured at previous year-end | Thomson Reuters Institutional Holdings |
| BHAR Prior | Buy and hold return for the firm in the prior year minus the sum of Pure CAR and Mixed CAR | CRSP |

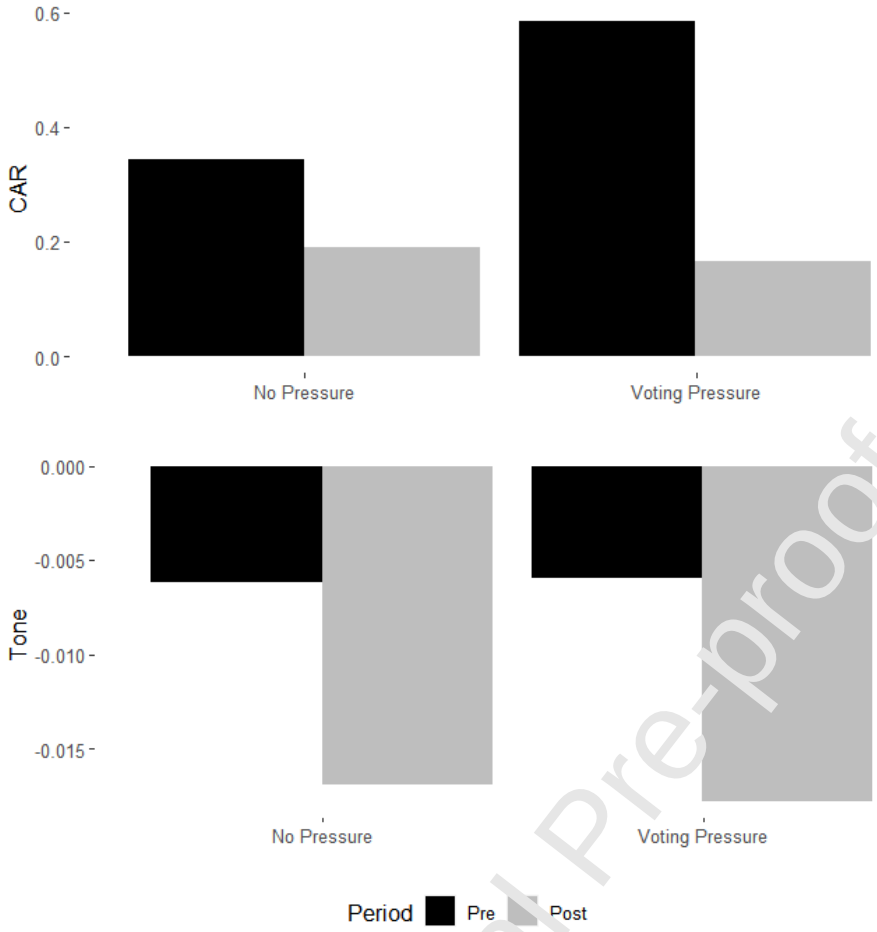


***Fig. 1: CAR and Tone of discretionary 8-Ks around shareholder meetings***

***Note: This figure displays average CAR (Tone) of discretionary 8-Ks around [-90,+90] day window of shareholder meetings. CAR is [-3,+3] Fama-French-Carhart four factor adjusted cumulative abnormal return. Tone is the ratio of the difference between number of positive words in the Loughran-McDonald list and that of negative words to the number of total words appeared in the Loughran and McDonald Master Dictionary. Post (Pre) Period indicates that an 8-K is filed between (0,+90] ([-90,0]) days of a meeting. Voting pressure (No Pressure) indicates the firm experienced at least one (no) negative ISS recommendation in the prior meeting.***

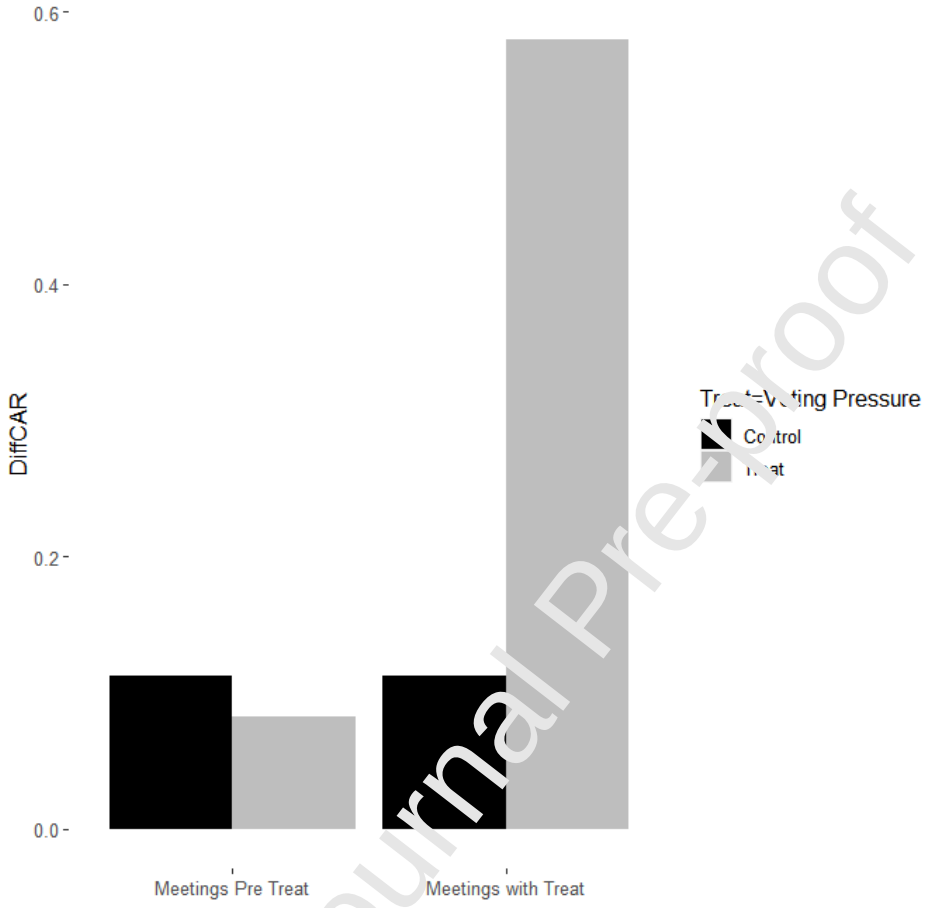




***Fig. 2: DiffCAR for treated and control firms***

***Note: This figure shows DiffCAR of Discretionary 8-Ks for treated and control firms before and after treatment. DiffCAR is the average difference between Pre Period and Post Period CARs, calculated for meetings with Discretionary 8-K filings in both Pre Period and Post Period. CAR is [-3,+3] Fama-French-Carhart four factor adjusted cumulative abnormal return. Post (Pre) Period indicates that an 8-K is filed between (0,+90] ([-90,0]) days of a meeting. Treat in Meetings with Treat indicates that the firm has experienced at least one negative ISS recommendation in the prior meeting, while Treat in Meetings Pre Treat indicates that the firm receives negative recommendation in the next meeting, but does not receive any negative recommendation in current or past***

***meetings. Control indicates that the firm has never experienced any negative recommendation throughout the sample period.***

***Table 1: Descriptive statistics***

| Year | Number of Firms | Number of Meetings | Meetings with a Current Neg. ISS | Meetings with Neg. ISS in past meeting | Management proposals voted | Management proposals with Current Neg. ISS |
|---|---|---|---|---|---|---|
| **2005** | 1,957 | 2,007 | 695 | 714 | 13,500 | 1,455 |
| **2006** | 2,049 | 2,108 | 601 | 694 | 14,297 | 1,232 |
| **2007** | 1,858 | 1,946 | 548 | 554 | 13,440 | 1,225 |
| **2008** | 1,900 | 1,965 | 546 | 566 | 13,959 | 1,180 |
| **2009** | 2,097 | 2,170 | 849 | 586 | 15,720 | 2,203 |
| **2010** | 2,076 | 2,143 | 697 | 818 | 15,604 | 1,682 |
| **2011** | 2,284 | 2,348 | 692 | 744 | 18,419 | 1,420 |
| **2012** | 2,314 | 2,375 | 706 | 696 | 18,823 | 1,606 |
| **2013** | 2,273 | 2,356 | 726 | 772 | 19,153 | 1,665 |
| **2014** | 2,197 | 2,263 | 686 | 680 | 18,784 | 1,432 |
| **2015** | 2,124 | 2,212 | 664 | 684 | 18,156 | 1,427 |
| **Avg.** | 2,102.6 | 2,172.1 | 679.1 | 680.7 | 16,350.5 | 1,502.5 |

Note: The table describes firms annual meeting and proposals voted over the sample period 2005 to 2015. Current Neg. ISS is when ISS recommends voting against management on the proposals. Meetings with a Current Neg. ISS is the number of meeting that had at least one management proposal with negative ISS recommendation. Meetings with Neg. ISS in past meeting is the number of meetings where there was at least one management proposal with a negative ISS recommendation in the last meeting. Management proposals voted is the number of management

proposals voted in the current meeting. Management proposals with Current Neg. ISS is the number of management proposals that receive negative ISS recommendation.

## Table 2: Summary of 8-K data

This panel summarizes characteristics of 8-K filed 180 days around the shareholder meeting for firms in our sample over the period 2005 to 2015. *Discretionary* 8-K is an indicator variable that takes the value of one if the 8-K includes any disclosure under Item 7.01 or 8.01. *Number of Items* is the number of different items filed in the 8-K. *CAR* is the [-3,+3] Fama-French-Carhart four factor adjusted cumulative abnormal return around the 8-K report date. *Tone* is the number of positive minus that of negative words divided by the total words in the 8-K. *Positive* (*Negative*) *Words* are the number of positive (negative) words divided by the total number of words.

### Panel A: All 8-Ks

| | Mean | 25th Percentile | Median | 75th Percentile | Standard Deviation | N |
|---|---|---|---|---|---|---|
| ***Discretionary* 8-K** | 0.439 | 0 | 0 | 1 | 0.496 | 113,021 |
| ***Number of Items*** | 2.055 | 2 | 2 | 2 | 0.846 | 113,021 |
| ***CAR* (%)** | 0.257 | -2.906 | 0.124 | 3.213 | 7.057 | 113,021 |
| ***Tone* (%)** | -0.007 | -0.317 | 0.202 | 0.386 | 0.674 | 113,021 |
| ***Positive Words* (%)** | 0.581 | 0.34 | 0.459 | 0.73 | 0.383 | 113,021 |
| ***Negative Words* (%)** | 0.587 | 0 | 0.313 | 0.959 | 0.741 | 113,021 |

Note: This panel reports summary statistics for all 8-Ks filed by sample firms 180 days around annual meetings.

### Panel B: Sample of discretionary 8-Ks

| | Mean | 25th | Median | 75th | Standard | N |
|---|---|---|---|---|---|---|

| | | Percentile | | Percentile | Deviation | |
|---|---|---|---|---|---|---|
| ***Number of Items*** | 2.205 | 2 | 2 | 3 | 0.942 | 49,573 |
| ***CAR* (%)** | 0.298 | -2.679 | 0.176 | 3.042 | 6.894 | 49,573 |
| ***Tone* (%)** | -0.012 | -0.301 | 0.2 | 0.389 | 0.697 | 49,573 |
| ***Positive Words* (%)** | 0.564 | 0.332 | 0.446 | 0.685 | 0.386 | 49,573 |
| ***Negative Words* (%)** | 0.576 | 0 | 0.296 | 0.914 | 0.758 | 49,573 |
| ***CAR* (*Pure*) (%)** | 0.243 | -2.568 | 0.163 | 2.888 | 6.643 | 35,407 |

Note: This panel reports summary statistics for the sample of *Discretionary* 8-Ks. *CAR (Pure*) is the [-3,+3] CAR of all (*Pure*) *Discretionary* 8-Ks. *Pure Discretionary* 8-K takes the value of one when disclosure is only under Item 7.01 and/or Item 8.01 (along with Item 9.01). Item 9.01 includes financial statements and exhibits and cannot standalone in an 8-K.

### Panel C: Firm-level characteristics

| | Mean | 25th Percentile | Median | 75th Percentile | Standard Deviation | N |
|---|---|---|---|---|---|---|
| ***Negative ISS*** | 0.315 | 0 | 0 | 1 | 0.464 | 26,591 |
| ***Fraction Negative*** | 0.101 | 0 | 0 | 0.125 | 0.194 | 26,591 |
| ***Current Negative ISS*** | 0.316 | 0 | 0 | 1 | 0.465 | 26,591 |
| ***Shareholder proposal*** | 0.11 | 0 | 0 | 0 | 0.313 | 26,591 |
| ***Size*** | 7.074 | 5.785 | 7.02 | 8.258 | 1.865 | 26,591 |
| ***Leverage*** | 0.18 | 0.006 | 0.118 | 0.286 | 0.199 | 26,591 |
| ***Tobin's Q*** | 2.311 | 1.105 | 1.586 | 2.611 | 2.164 | 26,591 |
| ***ROA*** | 0.016 | 0.004 | 0.034 | 0.082 | 0.157 | 26,591 |
| ***Number of Analysts*** | 3.246 | 1 | 2 | 4 | 3.734 | 26,591 |
| ***Institutional Ownership*** | 0.638 | 0.453 | 0.69 | 0.843 | 0.268 | 26,591 |

Note: This panel reports summary characteristics of firm years included in the sample. The sample includes all firms covered by RiskMetrics with required data over the period 2005 to 2015. *Negative ISS* takes the value of one if the firm received at least one negative recommendation on its management proposals from ISS in the previous meeting. *Fraction Negative* is the fraction of management proposals with a negative ISS recommendation in the previous meeting. *Current Negative ISS* takes the value one if at least one proposal in the current meeting has a negative recommendation. *Shareholder proposal* is an indicator of whether the current meeting includes at least one shareholder proposal. *Size* is the natural logarithm of total assets. *Leverage* is book value of debt over total assets,

*Tobin's Q* is the market value of equity plus book value of debt, divided by the book value of equity and debt. *ROA* is net income over lagged total assets, *Number of Analysts* is the number of analysts covering the firm, and *Institutional Ownership* is the level of institutional ownership. Firm level control variables *Size*, *Leverage*, *Tobin's Q*, *ROA*, *Number of Analysts*, and *Institutional Ownership*, are all lagged by one year.



**Table 3: Univariate analysis**

| | **Panel A. All Meetings** | | | |
|---|---|---|---|---|
| | All 8-K | Non-*Discretionary* 8-K | *Discretionary* 8-K | *Pure Discretionary* 8-K |
| CAR (*Pre Period*) | 0.306 | 0.223 | 0.419 | 0.338 |
| Num. of 8-K | 56,866 | 32,737 | 24,129 | 17,529 |
| CAR (*Post Period*) | 0.206 | 0.225 | 0.183 | 0.151 |
| Num. of 8-K | 56,155 | 30,711 | 25,444 | 17,878 |
| Pre – Post CARs | 0.100 | -0.002 | 0.235 | 0.187 |
| P-value for difference | 0.017** | 0.974 | 0.000*** | 0.008*** |
| | **Panel B: Meetings with Voting Pressure** | | | |
| | All 8-K | Non-*Discretionary* | *Discretionary* 8-K | *Pure Discretionary* 8-K |

| | | 8-K | | |
|---|---|---|---|---|
| CAR (*Pre Period*) | 0.397 | 0.263 | 0.586 | 0.473 |
| Num. of 8-K | 17,673 | 10,324 | 7,349 | 6,149 |
| CAR (*Post Period*) | 0.227 | 0.276 | 0.166 | 0.078 |
| Num. of 8-K | 17,439 | 9,596 | 7,843 | 6,274 |
| Pre – Post CARs | 0.171 | -0.013 | 0.419 | 0.395 |
| P-value for difference | 0.032** | 0.902 | 0.000*** | 0.001*** |

Note: The table reports average [–3,+3] day cumulative abnormal returns (CAR) around 8-K filings. Panel A includes all shareholder meetings over the 2005 to 2015 period for sample firms. Column 1 reports CARs for all 8-Ks filed 180 days around shareholder meetings. Column 2 (3) [4] includes CARs for Non (All) [Pure] *Discretionary* 8-Ks. An 8-K is classified as discretionary if it includes at least one of Item 7.01 or 8.01. A *Pure Discretionary* 8-K is an 8-K that includes only Item 7.01 and/or 8.01, and may include Item 9.01. Item 9.01 includes financial statements and exhibits, and cannot standalone in an 8-K. *Pre Period* (*Post Period*) includes 90 days before (after) the meeting. Panel B includes 8-K filed around meetings with voting pressure, that is when Negative ISS is one. A meeting is classified as a Negative ISS meeting if the firm had at least one management proposal with a negative ISS recommendation in the prior meeting. The p-value is for the difference between the average *Pre* and *Post Period* CAR. *, **, *** denote significance at the 10%, 5% and 1% for two-tailed tests, respectively.

**Table 4: Stock price reaction of 8-K filed around annual meeting**

| | **Panel A: Discretionary 8-K** | | **Panel B: Non Discretionary 8-K** | |
|---|---|---|---|---|
| | Negative ISS | Fraction Negative | Negative ISS | Fraction Negative |
| ***Pre Period* x *Voting Pressure*** | 0.351** | 0.866** | 0.037 | 0.227 |
| | (0.023) | (0.037) | (0.783) | (0.504) |
| ***Pre Period*** | 0.125 | 0.154** | 0.016 | 0.005 |
| | (0.122) | (0.049) | (0.844) | (0.949) |
| ***Voting Pressure*** | -0.009 | -0.345 | -0.045 | -0.217 |
| | (0.937) | (0.285) | (0.675) | (0.447) |
| ***Shareholder Proposal*** | -0.04 | -0.038 | 0.168 | 0.168 |
| | (0.731) | (0.747) | (0.190) | (0.189) |
| ***Current Negative ISS*** | 0.098 | 0.097 | -0.088 | -0.088 |
| | (0.315) | (0.323) | (0.292) | (0.295) |
| ***Gap Last*** | 0.014 | 0.014 | -0.004 | -0.004 |
| | (0.579) | (0.565) | (0.869) | (0.869) |

| | | | | |
|---|---|---|---|---|
| ***Number Items*** | 0.118 | 0.116 | 0.101 | 0.101 |
| | (0.182) | (0.188) | (0.179) | (0.180) |
| ***Size*** | -0.904*** | -0.900*** | -1.081*** | -1.081*** |
| | (0.000) | (0.000) | (0.000) | (0.000) |
| ***Leverage*** | 0.874* | 0.883* | 0.847* | 0.847* |
| | (0.077) | (0.074) | (0.088) | (0.088) |
| ***Tobin's Q*** | -0.176*** | -0.177*** | -0.226*** | -0.226*** |
| | (0.000) | (0.000) | (0.000) | (0.000) |
| ***ROA*** | -0.637 | -0.654 | -2.252*** | -2.253*** |
| | (0.236) | (0.225) | (0.000) | (0.000) |
| ***Number of Analysts*** | -0.003 | -0.003 | -0.008 | -0.008 |
| | (0.721) | (0.742) | (0.368) | (0.364) |
| ***Institutional Ownership*** | -0.649 | -0.655 | -0.845** | -0.847** |
| | (0.148) | (0.145) | (0.032) | (0.032) |
| **Fixed Effects** | Yes | Yes | Yes | Yes |
| **R-squared** | 0.106 | 0.106 | 0.078 | 0.078 |
| **N** | 49,573 | 49,573 | 63,448 | 63,448 |

Note: This table reports results of OLS estimations where the dependent variable is [-3,+3] CARs around 8-Ks filed 180 days around annual meetings. The dependent variable has been multiplied by 100. *Voting Pressure* is captured by Negative ISS or Fraction Negative as indicated in the column headings. Negative ISS takes the value of one if there was at least one negative ISS recommendation on management proposals in the prior meeting. Fraction Negative is the fraction of management proposals with negative recommendations in the previous meeting. *Pre Period* takes the value of one in the 30 days prior to the meeting. All control variables are defined in Appendix 2. We also include firm fixed effects, year fixed effects, 8-K item type fixed effects and meeting type fixed effects. Standard errors are clustered by firm. *P*-values are shown in parentheses. All continuous variables are winsorized at 1% and 99% levels. *, **, *** denote significance at the 10%, 5% and 1% for two-tailed tests, respectively.

**Table 5: Stock price reaction of discretionary 8-K filed around annual meeting**

| | **Panel A: Pure Discretionary 8-K** | | **Panel B: Mixed Discretionary 8-K** | |
|---|---|---|---|---|
| | Negative ISS | Fraction Negative | Negative ISS | Fraction Negative |
| ***Pre Period* x *Voting Pressure*** | 0.455*** | 1.116** | 0.204 | 0.925 |
| | (0.005) | (0.020) | (0.477) | (0.295) |
| ***Pre Period*** | 0.049 | 0.102 | 0.345* | 0.329* |
| | (0.599) | (0.245) | (0.057) | (0.055) |
| ***Voting Pressure*** | -0.134 | -0.471 | -0.0[illegible] | -0.434 |
| | (0.296) | (0.204) | (0.81[illegible]) | (0.530) |
| ***Shareholder Proposal*** | -0.073 | -0.065 | -0.257 | -0.253 |
| | (0.598) | (0.637) | (0.343) | (0.350) |
| ***Current Negative ISS*** | 0.084 | 0.085 | 0.211 | 0.21 |
| | (0.433) | (0.432) | (0.269) | (0.272) |
| ***Gap Last*** | -0.018 | -0.017 | 0.07 | 0.07 |
| | (0.554) | (0.557) | (0.219) | (0.220) |
| ***Number Items*** | 0.101 | 0.102 | 0.185 | 0.184 |
| | (0.307) | (0.302) | (0.453) | (0.456) |
| ***Size*** | -0.828*** | -0.827*** | -1.118*** | -1.117*** |
| | (0.000) | (0.000) | (0.000) | (0.000) |
| ***Leverage*** | 1.613*** | 1.626*** | -0.575 | -0.582 |
| | (0.006) | (0.006) | (0.559) | (0.554) |
| ***Tobin's Q*** | -0.147*** | -0.147*** | -0.246*** | -0.247*** |
| | (0.004) | (0.003) | (0.007) | (0.007) |
| ***ROA*** | -0.339 | -0.351 | -2.135** | -2.137** |
| | (0.609) | (0.597) | (0.045) | (0.044) |
| ***Number of Analysts*** | -0.003 | -0.002 | -0.013 | -0.013 |
| | (0.808) | (0.815) | (0.442) | (0.449) |
| ***Institutional Ownership*** | -0.783 | -0.777 | -0.308 | -0.316 |
| | (0.132) | (0.136) | (0.716) | (0.709) |
| **Fixed Effects** | Yes | Yes | Yes | Yes |

| | | | | |
|---|---|---|---|---|
| **R-squared** | 0.122 | 0.122 | 0.206 | 0.206 |
| **N** | 34,977 | 34,977 | 13,657 | 13,657 |

Note: This table reports OLS estimation where the dependent variable is [-3,+3] CARs around 8-K filed 180 days around shareholder meetings and has been multiplied by 100. The sample in Panel A (B) includes only *Pure* (*Mixed*) *Discretionary* 8-Ks that include only (with other items) Item 7.01, Item 8.01, and Item 9.01. *Voting Pressure* is captured by Negative ISS (Fraction Negative) in Model 1 (2). Negative ISS takes the value of one if there was at least one negative ISS recommendation on management proposals in the prior meeting. Fraction Negative is the fraction of management proposals with negative recommendation in the previous meeting. *Pre Period* is one for 8-Ks filed 90 days prior to the meeting. All control variables are defined in Appendix 2. Firm, year, 8-K item type and meeting type fixed effects are included. Standard errors are clustered by firm. *P*-values are shown in parentheses. All continuous variables are winsorized at 1% and 99% levels. *, **, *** denote significance at the 10%, 5% and 1% for two-tailed tests, respectively.

**Table 6: Tone of discretionary 8-K filed around meeting**

| | **Non Disc. 8-K** | **Disc. 8-K** | **Pure Disc. 8-K** | **Disc. 8-K** | |
|---|---|---|---|---|---|
| | Model 1 Tone | Model 2 Tone | Model 3 Tone | Model 4 Positive Words | Model 5 Negative words |
| ***Pre Period* x *Negative ISS*** | -0.01 | 0.01 | 0.009 | -0.008 | -0.005 |
| | (0.283) | (0.379) | (0.533) | (0.275) | (0.706) |
| ***Pre Period*** | 0.034*** | 0.003 | 0.001 | -0.009** | -0.016** |
| | (0.000) | (0.697) | (0.942) | (0.034) | (0.046) |
| ***Negative ISS*** | -0.01 | -0.002 | 0.008 | 0.005 | -0.006 |
| | (0.217) | (0.867) | (0.514) | (0.453) | (0.611) |
| ***Shareholder Proposal*** | 0.003 | -0.004 | -0.006 | -0.003 | 0.004 |
| | (0.775) | (0.818) | (0.776) | (0.759) | (0.807) |
| ***Current Negative ISS*** | -0.009 | -0.007 | 0.003 | -0.001 | 0.002 |
| | (0.156) | (0.406) | (0.775) | (0.814) | (0.814) |
| ***Gap Last*** | 0.007*** | 0.003 | 0.007*** | 0.003** | -0.001 |
| | (0.000) | (0.209) | (0.009) | (0.018) | (0.545) |
| ***Number Items*** | -0.193*** | 0.207*** | 0.250*** | -0.029*** | -0.267*** |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| ***Size*** | 0.020* | -0.018 | -0.028* | -0.021*** | -0.008 |
| | (0.056) | (0.192) | (0.091) | (0.006) | (0.595) |

| | | | | | |
|---|---|---|---|---|---|
| ***Leverage*** | 0.084** | -0.005 | -0.017 | 0.036 | 0.047 |
| | (0.015) | (0.930) | (0.786) | (0.179) | (0.407) |
| ***Tobin's Q*** | 0.010*** | 0.003 | 0.005 | -0.001 | -0.005 |
| | (0.000) | (0.315) | (0.173) | (0.453) | (0.147) |
| ***ROA*** | 0.073** | 0.063 | 0.02 | 0.022 | -0.061 |
| | (0.027) | (0.150) | (0.679) | (0.344) | (0.188) |
| ***Number of Analysts*** | -0.001 | -0.001 | -0.001 | 0 | 0.001 |
| | (0.606) | (0.647) | (0.349) | (0.534) | (0.671) |
| ***Institutional Ownership*** | -0.061** | -0.042 | 0.004 | 0.014 | 0.097** |
| | (0.046) | (0.290) | (0.934) | (0.557) | (0.020) |
| **Fixed Effects** | Yes | Yes | Yes | Yes | Yes |
| **R-squared** | 0.284 | 0.282 | 0.288 | 0.09 | 0.158 |
| **N** | 63,364 | 49,573 | 34,277 | 49,573 | 49,573 |

Note: This table reports results of OLS estimation where the dependent variable is Tone or Positive or Negative words as specified at the column head. The sample consists of all Non-*Discretionary* (*Discretionary*) [*Pure Discretionary*] 8-Ks in Model 1 (2, 4 and 5) [3]. Tone is the number of positive minus negative words as a proportion of total words. Positive (Negative) words is the number of positive (negative) words as a proportion of total words. The dependent variable has been multiplied by 100. *Negative ISS* takes the value of one if there was at least one negative ISS recommendation on management proposals in the prior meeting. Control variables are described in Appendix 2. Firm, year, 8-K item type and meeting type fixed effects are included. Standard errors are clustered by firm. *P*-values are shown in parentheses. All continuous variables are winsorized at 1% and 99% levels. *, **, *** denote significance at the 10%, 5% and 1% for two-tailed tests, respectively.

***Table 7: Effect of discretionary 8-K on management support***

| | **Panel A: All Proposals** | | **Panel B: Proposals with Prior Discretionary 8-K** | |
|---|---|---|---|---|
| | With Current Positive ISS | With Current Negative ISS | With Current Positive ISS | With Current Negative ISS |
| ***Pure CAR*** | 0.613 | 3.764* | 0.574 | 6.972** |
| | (0.251) | (0.091) | (0.385) | (0.025) |
| ***Mixed CAR*** | 0.283 | 2.930** | 0.25 | 3.56 |
| | (0.340) | (0.018) | (0.660) | (0.134) |
| ***BHAR Prior*** | 0.789*** | -0.296 | 0.659*** | -0.454 |
| | (0.000) | (0.277) | (0.000) | (0.540) |
| ***Negative ISS*** | -0.150*** | 0.362 | -0.206** | 0.702 |
| | (0.008) | (0.164) | (0.041) | (0.299) |
| ***Shareholder Proposal*** | -15.749*** | -13.364*** | -17.025*** | -21.939*** |
| | (0.000) | (0.000) | (0.000) | (0.000) |
| ***Size*** | -0.041 | -0.693 | -0.396** | -0.159 |
| | (0.709) | (0.122) | (0.017) | (0.877) |

| | | | | |
|---|---|---|---|---|
| ***Leverage*** | -0.981*** | 1.87 | -2.372*** | 1.736 |
| | (0.006) | (0.205) | (0.000) | (0.568) |
| ***Tobin's Q*** | 0.105*** | -0.064 | 0.140*** | 0.023 |
| | (0.000) | (0.489) | (0.005) | (0.925) |
| ***ROA*** | 2.249*** | -1.327 | 1.444** | -3.586 |
| | (0.000) | (0.312) | (0.048) | (0.300) |
| ***Number of Analysts*** | 0.009* | -0.012 | 0.018** | 0.024 |
| | (0.083) | (0.687) | (0.016) | (0.651) |
| ***Institutional Ownership*** | -0.441 | -12.044*** | -0.781 | -13.932** |
| | (0.156) | (0.000) | (0.167) | (0.020) |
| **Fixed Effects** | Yes | Yes | Yes | Yes |
| **R-squared** | 0.224 | 0.749 | 0.297 | 0.783 |
| **N** | 185,131 | 19,522 | 60,237 | 5,300 |

Note: The proposal-level sample for Panel A (B) includes all management proposals (where the firm filed at least one *Pure* and *Mixed Discretionary* 8-Ks in the 90 days prior to the meeting). A *Pure (Mixed) Discretionary* 8-K includes only (along with other items) Item 7.01 and/or Item 8.01, and Item 9.01. Current Positive (Negative) ISS includes all management proposals in current meeting on which ISS recommends voting with (against) management. The dependent variable is *Abnormal Support*, the difference between proposal support and the median support of the proposal type-year multiplied by 100. *Pure* (*Mixed*) *CAR* is the sum of CARs around *Pure (Mixed) Discretionary* 8-Ks filed in *Pre Period*. *BHAR Prior* is the buy-and-hold abnormal return for the firm in the prior year minus the sum of *Pure CAR* and *Mixed CAR*. *Negative ISS* measures voting pressure and takes the value of one if the firm received at least one negative ISS recommendation on management proposals in the previous meeting. Other control variables are defined in Appendix 2. Firm, year, proposal type, and meeting type fixed effects are included. Standard errors are clustered by firm. *P*-values are shown in parentheses. All continuous variables are winsorized at 1% and 99% levels. *, **, *** denote significance at the 10%, 5% and 1% for two-tailed tests, respectively.

***Table 8: Investor inattention and selective 8-K filing***

| | **Panel A:** ***Investor Inattention Avg*** | | **Panel B:** ***Investor Inattention Fraction*** | | **Panel C:** ***Investor Inattention Ownership*** | |
|---|---|---|---|---|---|---|
| | Negative ISS | Fraction Negative | Negative ISS | Fraction Negative | Negative ISS | Fraction Negative |
| ***Pre Period* x *Voting Pressure* x *Inattention*** | 8.419** | 25.673*** | 3.663** | 9.908*** | 2.407** | 5.238** |
| | (0.014) | (0.002) | (0.015) | (0.008) | (0.037) | (0.046) |
| ***Pre Period* x *Voting Pressure*** | -0.559 | -2.207** | -0.759* | -2.376** | -1.444* | -3.047 |
| | (0.112) | (0.018) | (0.081) | (0.042) | (0.098) | (0.117) |
| ***Pre Period* x *Investor Inattention*** | -1.891 | -1.738 | -0.875 | -0.698 | -0.369 | -0.181 |
| | (0.287) | (0.296) | (0.261) | (0.340) | (0.549) | (0.764) |
| ***Voting Pressure* x *Investor Inattention*** | -2.614 | -11.884* | -1.036 | -3.626 | -0.789 | -4.396** |

| | | | | | | |
|---|---|---|---|---|---|---|
| | (0.307) | (0.091) | (0.375) | (0.252) | (0.407) | (0.041) |
| ***Pre Period*** | 0.352** | 0.377** | 0.412* | 0.399* | 0.435 | 0.325 |
| | (0.045) | (0.023) | (0.060) | (0.054) | (0.353) | (0.479) |
| ***Voting Pressure*** | 0.282 | 1.059 | 0.306 | 0.82 | 0.567 | 2.905* |
| | (0.298) | (0.164) | (0.370) | (0.390) | (0.428) | (0.066) |
| ***Inattention*** | 10.159*** | 10.442*** | 4.135*** | 4.170*** | 1.458*** | 1.689*** |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.009) | (0.002) |
| **Control Variables** | Yes | Yes | Yes | Yes | Yes | Yes |
| **Fixed Effects** | Yes | Yes | Yes | Yes | Yes | Yes |
| **R-squared** | 0.007 | 0.007 | 0.007 | 0.007 | 0.007 | 0.007 |
| **N** | 49,573 | 49,573 | 49,573 | 49,573 | 49,573 | 49,573 |

Note: The table displays partial results of OLS regression where the dependent variable is [-3,+3] CARs. The sample includes all *Discretionary* 8-Ks filed by sample firms in the 180 days around meetings. *Investor Inattention* is proxied by *Investor Inattention Avg* [*Fraction*] (*Ownership*) in Panel A [B] (C). *Investor Inattention Avg* is the average number of important (greater than 1% ownership) portfolio firms held by the firms' institutional investors in the quarter prior to the vote. *Investor Inattention Fraction* (*Ownership*) is the fraction of (ownership of) the most distracted investors to total (ownership of) institutional investors in the quarter prior to the vote. *Pre Period* takes the value of one in the 90 days prior to the meeting. *Voting Pressure* is proxied by Negative ISS (Fraction Negative) in column 1 (2) of each panel. Other variables included in the estimation but not displayed are *Shareholder Proposal*, *Current Negative ISS*, *Gap Last*, *Number of Items*, *Size*, *Leverage*, *Tobin's Q*, *ROA*, *Number of Analysts*, and *Institutional Ownership*. Firm, year, 8-K item type, and meeting type fixed effects are also included. Standard errors are clustered by firm. *P*-values are shown in parentheses. All continuous variables are winsorized at 1% and 99% levels. *, **, *** denote significance at the 10%, 5% and 1% for two-tailed tests, respectively.

**Table 9: Family ownership and selective 8-K filing**

| | Negative ISS | Fraction Negative |
|---|---|---|
| ***Pre period* x *Voting pressure* x *Family firm*** | -1.249*** | -2.551** |
| | (0.005) | (0.026) |
| ***Pre Period* x *Voting Pressure*** | 0.507*** | 1.084** |
| | (0.005) | (0.029) |
| ***Pre Period* x *Family Firm*** | 1.046*** | 0.882*** |
| | (0.000) | (0.002) |
| ***Voting Pressure* x *Family Firm*** | 0.744** | 1.17 |
| | (0.048) | (0.164) |
| ***Pre Period*** | 0.056 | 0.109 |
| | (0.528) | (0.196) |
| ***Family Firm*** | -0.253 | -0.115 |
| | (0.321) | (0.634) |
| ***Voting Pressure*** | -0.133 | -0.591 |
| | (0.309) | (0.113) |
| **Control Variables** | Yes | Yes |
| **Fixed Effects** | Yes | Yes |
| **R-squared** | 0.006 | 0.006 |
| **N** | 45,168 | 45,168 |

Note: The table displays partial results of OLS regression where the dependent variable is [-3,+3] CARs. The sample includes all discretionary 8-K filed by sample firms in the 180 days around meetings. *Voting Pressure* is proxied by Negative ISS and Fraction Negative in Column 1 and Column 2, respectively. Negative ISS is a dummy variable that takes the value of one if the firm had a negative ISS recommendation in the prior meeting. Fraction Negative is the proportion of proposals with a negative recommendation in the prior meeting. *Family firm* is a dummy variable if the firm is family controlled. Other variables included in the estimation but not displayed are *Shareholder Proposal*, *Current Negative ISS*, *Gap Last*, *Number of Items*, *Size*, *Leverage*, *Tobin's Q*, *ROA*, *Number of Analysts*, and *Institutional Ownership*. Firm, year, 8-K item type, and meeting type fixed effects are also included. Standard errors are clustered by firm. *P*-values are shown in parentheses. All continuous variables are winsorized at 1% and 99% levels. *, **, *** denote significance at the 10%, 5% and 1% for two-tailed tests, respectively.

## Highlights

- This paper examines whether sovereign rating actions by three major rating agencies are affected by the intensity of the COVID-19 health crisis.
- Findings show that sovereign ratings respond to the changes in the economic repercussions caused by the pandemic (economic outlook, government's response to crisis) and not directly by the intensity of the health crisis (proxied by case and mortality rates).
- Contrary to expectations credit rating agencies applied a mostly business-as-usual approach and reviewed sovereign ratings only when they were scheduled for regulatory purposes scheduled ahead of the pandemic.
- Despite credit rating agencies' lack of timeliness, sovereign rating news from S&P and Moody's appear to convey price-relevant information to the bond markets.