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Finance Working Paper N° 763/2021
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Abstract

The short-selling of exchange-traded funds (ETFs) creates “phantom” ETF shares, trading at market prices, with cash flows rights but no associated voting rights. Unlike regular ETF shares backed by underlying securities that are voted as directed by the ETF sponsor, phantom ETF shares hedged by the underlying basket as part of market-making activities result in a significant number of side-lined votes of the underlying securities. We find increases in phantom shares for the corresponding underlying securities are associated with decreases in the number of proxy votes cast (for and against), and increases in broker non-votes, voting premia, and value-reducing acquisitions.

Keywords: Exchange-Traded Funds, Proxy Voting, Broker Non-Vote, Voting Premium, Short Interest, Operational Shorting, Authorized Participants, ETF Market Making, Voting of Hedged Positions, Empty Voting

JEL Classifications: G11, G12, G14, G23, G34

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Phantom of the Opera: ETF Shorting and Shareholder Voting

With the dramatic increase in passively invested assets across the globe, index funds and exchange-traded funds (ETFs) play an increasingly important role in corporate governance.[1] To this end, there is a growing academic literature on the contrasting governance effects of passive investors. On one hand, as opposed to active managers, for whom exit is a governance strategy, passive investors must rely on voice – the exercise of voting rights – to take an active role in governance.[2] Hence, the institutional attention associated with passive ownership may enhance governance in the firm (e.g., Appel, Gormley, and Keim (2016), Fisch, Hamdani, and Solomon (2019), and Lewellen and Lewellen (2022)). On the other hand, the implicit trust of the market's price for a given security and the inherent cost minimization approach may result in a one-size-fits-all, and a pro-management approach to governance (e.g., Bebchuk, Cohen, and Hirst (2017), Lund (2018), and Heath et al. (2022)).

While the debate regarding the efficacy of voting decisions by passive funds is in its early stages, our paper addresses a more foundational issue: whether the shares of stocks underlying the ETFs are voted at all. To be clear, our evidence does not suggest that ETF sponsors (e.g., BlackRock, State Street, Vanguard) do not vote the underlying firm shares owned by their ETFs.[3] Instead, as a presumably unintended consequence of ETF security design, we show that for a subset of ETF shares, the underlying shares of the firm's stock backing this subset are sidelined from the voting process. These shares are not held and voted by the ETF sponsor, but rather they are held by the authorized participant/market maker (hereafter, AP) or arbitrageur for hedging purposes. Because the shares are held as part of a hedge, the

[1] According to the Pensions & Investments' annual survey in 2021, worldwide indexed assets under management have risen to $20.87 trillion (pionline.com). See Bebchuk and Hirst (2019) and Kahan and Rock (2020) for a recent discussion of governance implications of index funds.

[2] See Hirschman (1970) for a detailed discussion of the 'exit' and 'voice' responses, and Yermack (2010) for a survey of research on shareholder voting and corporate governance. Recently, Brav, Jiang, and Li (2021) study the mutual fund voting in proxy contests, finding active funds being more pro-dissident than passive funds. Bolton, Ravina, and Rosenthal (2020) analyze voting patterns of institutional investors from proxy voting records to infer institutions' ideology.

[3] See Fenn and Robinson (2009) for an analysis of proxy voting by ETFs.

AP/arbitrageur is not a true beneficial owner of the security and therefore abstains from proxy voting. This abstention effectively decouples the cash flow from the voting rights of the corresponding ETF share. We refer to these as "*phantom ETF shares*", and the corresponding underlying securities as simply "*phantom shares*". We demonstrate that such phantom shares are associated with decreased voting of the underlying shares, and we examine the firm governance/value implications of this decrease in votes cast at shareholder meetings.

To better understand the origin of phantom ETF shares, consider the governance implications of three different investments depicted in Figure 1, based on our overall sample findings: (i) purchasing the individual stocks belonging to S&P 500 index, (ii) investing an S&P 500 index mutual fund, and (iii) purchasing an S&P 500 ETF. For an investor who purchases the 500 underlying securities of the S&P 500 in the appropriate weights, each $1 invested generates $1 of proportionate voting rights in those securities, where the investor would make the voting decisions. For an S&P 500 index mutual fund investment, each $1 invested generates $0.98 of proportionate voting rights where the investment advisor chooses how each proxy item is voted. The loss of $0.02 in voting rights relative to the individual stock example is due to the 2% cash holding for the average fund in our sample to accommodate daily redemptions. For an investor purchasing S&P 500 ETF, we find that each $1 invested generates only $0.84, on average, in voting rights in the underlying securities in our sample.

What causes this striking difference between the voting rights associated with index funds and ETFs? Despite the many similarities between the two products, the biggest difference is the nature of liquidity provision. While index funds can only be purchased directly from an investment advisor as part of a 'long sale', ETF shares are purchased on the secondary market as part of both long sales (86% of value-weighted transactions) and short sales (14%). The importance of this distinction is that an ETF share purchased as part of a long sale is backed by underlying securities that are voted by the ETF sponsor. In contrast, if an ETF is sold short by APs/arbitrageurs and shares of the underlying securities are held long to hedge (as a typical liquidity provision practice for APs and/or a common arbitrage trade), the holders of

those shares will abstain from voting them.[4] This behavior reflects the market participants' desire to avoid both the appearance of and the regulatory and liability concerns related to "empty voting": voting the shares without corresponding economic exposure which has been eliminated by the joint long underlying and short ETF position.[5] Hence, while the ETF shares purchased via a long sale have the same cash flow and voting rights as an index mutual fund, for the ETF shares that are sold short by APs/arbitrageurs, the underlying securities held to hedge those positions tend to be sidelined in the voting process. The hedging mechanism, combined with a 2% cash position underlying the ETF long-sale portfolio, generates $0.84 in voting rights relative to the $1 invested in common stock.[6]

The focus of this paper is to examine the impact of the phantom ETF shares on corporate proxy voting. As investors increasingly invest in equities through ETFs, the sidelining of the underlying securities used as a hedge (i.e., either in the course of ETF liquidity provision or as part of an arbitrage trade) has the potential to distort the voting process in public firms. To address this issue, we first construct a measure of phantom ETF shares using ETF short interest data. Then, we translate this measure of phantom ETF shares to phantom shares using ETF portfolio holdings data. With this measure of phantom ownership of the underlying securities in hand, we examine the impact on corporate voting outcomes on a sample of voting records from 6,556 different US public companies by 1,150 ETFs over 2004-2018. On average, phantom shares are 14% of total ETF ownership (outstanding ETF shares + phantom ETF shares) of underlying

[4] For example, the European Securities and Market Authority (ESMA) sent a questionnaire to institutional market participants regarding their voting practices with respect to securities held as a hedge. Routinely, these participants indicated that they refrain from exercising their voting rights in such securities. Please see Appendix C for further details regarding the questionnaire and the responses of the market participants.

[5] Prior research has documented cases of hedged positions resulting in empty voting and the potential for regulatory and judicial enforcement actions due to the associated "risk decoupling" (e.g., Hu and Black (2006), Katz (2006), and Lee (2007)). Additionally, the responses to the ESMA questionnaire focused on uncovering potential "empty voting" issues make clear that institutional market participants are keenly aware of empty voting concerns and have enacted policies to eliminate them. Finally, there is anecdotal evidence that some corporations have even enacted bylaw changes to preclude such voting. Specifically, these bylaws require the disclosure of any hedging activities by common share owners who file shareholder proposals. See, for example, Sara Lee Corporation (https://www.sec.gov/Archives/edgar/data/0000023666/000129993308001659/htm_26377.htm) and Coach Inc. (https://www.sec.gov/Archives/edgar/data/1116132/0001157523-08-001365.txt).

[6] This estimate is derived from the long and short sale percentages of ETFs and the corresponding loss in voting rights illustrated in Figure 1. For this estimate, we assume the hedge to be comprised of the underlying stock. Specifically, $0.84 is the proportionate voting rights in the investment of $1, 86% × 98% + 14% × 0%.

shares in our sample (0.6% out of 4.1%). Focusing on small-cap firms such as those in the Russell 2000, the percentage of phantom shares rises to 21% of total ETF ownership of underlying shares (0.9% out of 4.2%).

The distribution of phantom shares is positively skewed.[7] Considering more broadly the full sample of investable securities, more than a third of the stocks in the Russell 3000 have phantom shares greater than 1% of shares outstanding, as shown in Figure 2. Consistent with our notion that phantom ETF shares translate to phantom shares that are not voted, in our baseline analyses, we find that increases in phantom shares around the voting record dates are associated with a decrease in voting (both for and against), and an increase in broker non-votes for the underlying securities, at the corresponding shareholder meetings. In other words, an increase in phantom shares is effectively associated with an increase in sidelined votes of the underlying.

To ensure our analysis is not driven by potentially endogenous factors, such as a dual trend in ETF ownership and voting patterns over time, we exploit two regulatory changes that affected uninstructed (or discretionary) broker voting. Before 2010, the Securities and Exchange Commission (SEC) allowed brokers to vote shares "without voting instructions from the beneficial owner" on uncontested elections of directors, which were deemed "routine" matters in shareholder meetings. This rule changed formally on January 1st, 2010, making such election of directors "non-routine", so that brokers would not be able to vote without instructions from the investors.[8] Repeating our main test on a sample of only director elections, and accounting for the change in policy, we find a strong positive relationship between phantom shares and broker non-votes, once brokers were no longer allowed discretion in voting such shares. However, before 2010 we find no relationship between phantom shares and broker non-votes, suggesting that brokers widely voted these sidelined shares in director elections. We repeat this test around a similar 2012 rule change that

[7] Phantom shares have a standard deviation of 0.75% in our sample. This high standard deviation relative to the mean suggests important heterogeneous variation that manifests itself in the economically significant real effects of phantom shares on corporate voting and governance/performance that we explore later in the paper in Section 3.

[8] See Order Approving Proposed Rule Change to Eliminate Broker Discretionary Voting for Election of Directors, SEC Release No. 34-60215 (July 1st, 2009), available at: https://www.sec.gov/rules/sro/nyse/2009/34-60215.pdf.

further narrowed the definition of routine matters and find similar results.[9] These findings corroborate the effect of phantom shares on sidelined votes, and address potential endogeneity concerns, using a setting with a plausibly exogenous regulatory change.

Next, we examine the conjectured mechanism for our findings (i.e., underlying securities used to hedge the ETF position not being voted) in multiple ways. We first start by proxying for the 'quality' of the hedge. While the entire basket of underlying securities could be used to hedge the short ETF position (e.g., all 500 stocks in the S&P 500), it is more plausible that a subset of those securities (e.g., 50 or 100 of the 500 stocks in the S&P 500) with the most similar collective risk characteristics to the entire basket could be more efficiently used instead. Therefore, we expect that the hedge is more likely to be composed of those stocks that are highly correlated with the return of the ETF. Using the return co-movement between each underlying security and the ETFs it belongs to as a proxy for the 'quality' of the hedge, we examine the association of such co-movement with the number of broker non-votes for a given stock. Consistent with our expectations, we find that the increase in broker non-votes with phantom shares is higher for the underlying stocks that are more likely to be used as hedge.

Second, to further identify the proposed hedging mechanism, we separate the two primary types of ETF shorting activity. The first is "operational shorting" where ETF short interest arises when APs sell ETF shares to secondary market participants before those shares are actually created.[10] As these shares have been sold, but not yet created, the APs effectively short the ETF shares for the purpose of liquidity provision and

[9] The 2012 rule change affected the following corporate governance proposals by deeming them non-routine: de-staggering the board, implementing majority voting in the election of directors, eliminating supermajority voting, use of written consents, rights to call a special meeting, and overriding certain types of anti-takeover provisions (https://www.sec.gov/investor/alerts/votinginannualshareholdersmeetings.pdf).

[10] While ETF shares are bought and sold by investors at bid-ask spreads posted by market makers, the supply of ETF shares adjusts due to the actions of APs. ETF sponsors authorize APs to arbitrage the difference in prices between the basket of underlying securities (e.g., the 500 stocks in the S&P 500) and the ETF (e.g., SPY, an ETF tracking the S&P 500). Through this mechanism, the supply of ETF shares is adjusted according to investor demand. To enhance ETF liquidity and exploiting additional trading settlement periods, however, Evans et al. (2021) show that APs are allowed to sell ETF shares that have not yet been created (operational shorting or "naked short selling for bona fide market making" as per Regulation SHO: https://www.sec.gov/investor/pubs/regsho.htm). Similar to the regular short-selling case, these shares can be bought and sold at ETF prices, granting investors economic ownership. However, because the AP has not purchased and delivered the basket of underlying securities to the sponsor, these ETF shares do not have corresponding voting rights exercised by the ETF sponsor.

market making (Evans et al. (2021)), which they then hedge by holding the underlying securities. The second is "directional shorting" where the ETF short interest is the result of ETF shares being borrowed and shorted to speculate, or to hedge market or industry exposures when taking a long position in a security (Huang, O'Hara, and Zhong (2021)).[11]

Using IHS Markit Securities Finance data on the actual ETF shares on-loan, we decompose the ETF short interest. We find that, on average, two-thirds of the overall ETF short interest are the result of operational shorting for market making purposes, and the remaining one-third of overall short interest is attributed to directional shorting. Having divided ETF shorting into these two components, we examine how phantom ETF shares created from both 'operational' and 'directional' short selling relate to broker non-votes and we find strong evidence that the operational shorting channel is much stronger in explaining the sidelining of the votes.[12] These results further validate that it is the hedging channel due to ETF liquidity provision/market making that is driving the sidelining of proxy votes.

As increases in phantom shares increase the percentage of sidelined votes, they are likely to affect the probability of a given proposal passing or failing. This is especially important given that a substantial number of firms have phantom shares greater than 1% of shares outstanding, as Figure 2 shows, with many firms' phantom shares exceeding 5% levels in certain years. To assess the economic implications of phantom shares from this perspective, we test the direct impact of sidelined votes by modeling the probability of different proposals passing. As this setting typically relies on the counterfactual that the phantom shares would have been voted by the ETF sponsors, we modify our total phantom shares variable by assigning a vote direction (for/against) to the phantom shares based on how the ETF sponsor voted the

[11] While SEC regulation 15c3-3 requires the use of cash-like collateral for securities lending by certain market participants, alternative lending access has increased the percentage of US equity loans backed by non-cash collateral. Using internal IHS Markit data, Khemdoudi and Marhefka (2017) document that for directional short selling over much of our sample period the percentage of US equity loans backed by non-cash collateral has increased from 10% to over 40%. For operational short selling, which we find in Section 2.5 to be the main driver of our findings, there is no such regulatory requirement.

[12] As a robustness check, we revisit the issue relying on recent literature that validates short volume as a proxy for intraday liquidity provision by market makers (e.g., Comerton-Forde, Jones, and Putnins (2016)). Using the ETF daily short volume and the ETF daily turnover as alternative proxies for phantom ETF shares generated through "operational shorting", we are able to replicate our baseline results. These results are reported in the Table IA.4.

shares they actually held in custody. We analyze contested (pass or fail within a margin of 5%) shareholder proposals that address governance items (Bach and Metzger (2019)), and corporate governance proposals that were affected by the 2012 SEC rule change (see footnote 9). We find that an increase in phantom shares that would have been voted in favor of the proposal, but were not (due to being sidelined), significantly decreases the probability of these proposals passing. Indeed, a one standard deviation increase in phantom missing 'for' votes causes governance items to switch from being likely to pass, to likely to fail. Next, we exploit a special setting where assigning a vote direction to the phantom shares is not necessary: proposals where shares outstanding serves as the base for voting outcomes so phantom shares (reflected as broker non-votes) would count as 'against' votes. Consequently, we further confirm that increases in phantom shares lead to reduced likelihood of passage. Overall, our findings emphasize the significant implications of phantom shares by documenting how phantom shares indeed affect the voting outcomes through sidelined votes.

We next look at the pricing implications of phantom shares by analyzing the relationship between phantom shares and the value of shareholder voting rights (i.e., the voting premium). To calculate the voting premiums of underlying shares we follow the methodology introduced by Kalay, Karakaş, and Pant (2014). Their approach essentially synthesizes a non-voting share using options, and obtains the voting premium by subtracting the price of the synthetic (non-voting) share from the price of the underlying (voting) share and normalizing the difference by the underlying share price. We find that voting premiums increase with the phantom shares, around the record date for special meetings, as well as for meetings that are contentious. In particular, we find the voting premium to be roughly three times larger for special meetings with a one standard deviation increase in the number of phantom shares. Analyzing whether phantom shares predict the contentious meetings, we find no effect. This suggests that the potential selection bias in firms with more phantom shares is unlikely to explain the increase in the voting premium in the presence of phantom shares. Together with the earlier vote outcome results, our findings highlight the importance of the phantom shares and their underlying economic significance: phantom shares make the voting process less efficient by reducing the quantity of shares voted (and increasing the broker non-votes), which in turn is reflected in

an increase in the price of votes attached to the shares around the contentious shareholder meetings.

As a final analysis of the governance implications of phantom shares, we examine their impact in an economic setting where shareholder voting plays a key role: mergers and acquisitions. Li, Liu, and Wu (2018) demonstrate the value-enhancing governance role of acquirer shareholder voting in M&A activity, particularly in cases where the acquirer intends to issue more than 20% of outstanding shares to finance the deal since such an issuance requires a shareholder vote. Consistent with their results, we find that high levels of phantom shares, interacted with poor firm governance, are associated with value-reducing acquisitions. To further analyze this channel, we use the 20% share issuance cut-off rule examined in Li, Liu, and Wu (2018), and find that the negative effect of phantom shares, which inhibit voting, on acquirer returns is only present in acquisitions that require a shareholder vote. We find that a one standard deviation increase in phantom shares leads to a 3.2% decrease in acquirer announcement returns, roughly the same magnitude that the required shareholder voting contributes to acquirer returns (Li, Liu, and Wu (2018)). These M&A results support the idea that the distortions in the proxy voting process associated with phantom shares have negative effects on firm governance and value.

As with any novel economic mechanism introduced in the literature, readers may be concerned about potential endogeneity or alternative causality driving the phantom share-proxy voting relationship we document. Simply considering how the phantom measure is constructed rules out such potential endogeneity for three reasons. First, the ETF phantom share measure is estimated over three trading days around the proxy voting record date of an underlying stock. Not only is that record date approximately two months before the actual proxy voting date, but as Hirst and Robertson (2022) show for the vast majority of proxy votes, investors are typically not notified about what issues will be on the ballot (i.e., about the agenda of the shareholder meeting) on that record date.

Second, distinguishing between operational vs. directional shorting channels and using alternative ETF market making proxies also help to rule out possible alternative causality. If phantom ETF shares are only created when an informed short-seller shorts the ETF, our results might simply reflect the incorporation of that information in the market. However, Evans et al. (2021) show that in contrast to the

potential negative information contained in directional shorting, operational shorting, which is the ETF equivalent of the liquidity-supplying shorting (Comerton-Forde, Jones, and Putnins (2016)), is purely liquidity driven and does not signal future underperformance for the underlying securities of the ETF. Given we find operational shorting to be the main driver of sidelined votes, our results are unlikely to be driven by informed directional ETF short selling.[13]

Third, our phantom shares estimate is created by aggregating across 30 ETFs on average, each with an average of 0.1% of their overall portfolio invested in the individual stock of interest. If there is an informed trading strategy for an individual equity around its proxy voting record date that is driving our results, trying to implement that strategy using ETFs would be both expensive and cumbersome given the large number of ETFs that would need to be traded, and the very small percentage of the stock of interest held by those ETFs. Simply put, because our measure of phantom shares is calculated based on liquidity motivated short-selling over a three-day window around a proxy voting record date that occurs two months before the actual voting and on which date the actual proxy voting items could not be known by investors, it is extremely unlikely for phantom shares to be endogenously related to the proxy voting outcome for any reason other than the vote sidelining we identify.

While this paper is the first to examine the impact of phantom ETF shares on shareholder voting, prior work has explored the issue of short-selling, phantom shares and empty voting for traditional equities (e.g., Hu and Black (2006), Christoffersen et al. (2007), Kahan and Rock (2008), Welborn (2008), and Aggarwal, Saffi, and Sturgess (2015)).[14] This literature makes the important point that securities lending may be associated with over-voting both directly, as market participants borrowed shares over the voting record date in order to vote them, and indirectly, as multiple claims of ownership may give rise to more than one vote per share. In contrast to this finding of over-voting, our results suggest that phantom ETF

[13] Further, in order to address the potential concern that informed directional short-selling is affecting or driving our results, we control for firm level short-selling in our tests.

[14] In a related work, Apfel et al. (2001) analyze the effect of short sales in the exercise of another important shareholder right, the right to sue. Examining a prosecution of claims of securities fraud in the case of Computer Learning Centers, Inc., they argue that "artificial" shares, created through short sales, lead to legal and practical problems due to difficulties of establishing the legal ownership of the shares and the associated class certification.

shares are associated with reduced voting. The difference stems from two sources. First, this early literature about securities lending and proxy voting helped, in part, to motivate changes in voting regulation, including the Dodd-Frank rules about broker voting on non-routine matters that helped to curb over-voting. Second, unlike borrowing or short-selling individual equities, the connection between phantom ETF shares and voting on the underlying is not direct. Rather, ETF shares in and of themselves have no associated voting rights; it is the securities underlying the ETF shares that have associated voting rights. The nature of these underlying securities and the location of these securities (e.g., the actual stocks underlying the ETF being held by the AP or a broker as opposed to by the sponsor/custodian) determine whether they are voted.

The accuracy and transparency of the US proxy voting process has also increasingly been under the spotlight of the SEC. Following up on the SEC's July 2010 "Concept Release on the U.S. Proxy System"[15] and the November 2018 "Roundtable on the Proxy Process"[16], which provide the blueprint for the proxy system in the US and discuss "proxy plumbing" problems such as over- and under-voting, the Investor Advisory Committee (IAC) of SEC has recently called for a deeper investigation of the impact of securities lending on voting rights.[17] We believe our paper makes a timely contribution to this inquiry. In particular, while the SEC's proxy voting regulatory focus in recent years has been on curbing potential overvoting, our results suggest that the pendulum may have swung too far the other way. In an effort to avoid both the appearance of, and the regulatory and liability issues, associated with "empty voting", market participants are leaving shares unvoted.

Overall, our paper contributes to the literature on corporate control and governance by introducing novel measures of the separation of cash flow and voting rights: phantom shares of the ETF and the corresponding underlying securities. We also show that, separate from index funds as alternative passive investment vehicles, this disassociation of economic exposure and voting rights arises from the unique

[15] https://www.sec.gov/rules/concept/2010/34-62495.pdf.

[16] https://www.sec.gov/files/proxy-round-table-transcript-111518.pdf.

[17] https://www.sec.gov/spotlight/investor-advisory-committee-2012/recommendation-investor-as-owner-subcommittee-proxy-plumbing.pdf.

short-selling and liquidity provision aspects of the ETF market, and distorts the shareholder voting, a fundamental corporate governance mechanism. Given the dramatic increase in ETF assets worldwide, this is an important difference relative to other passive vehicles that should give investors, managers and regulators pause. Indeed, the novel mechanism we introduce for sidelined votes can be interpreted as an exogenous shock to the shareholder voting turnout, and hence contributes to the existing literature on voting turnout and its effects on firm governance/value (Yermack (2010)).

This study also contributes to the ETF pricing literature by highlighting the importance of the value of voting rights in the underlying shares, which has not been examined by the literature previously, but is priced as our evidence suggests. Indeed, phantom shares are costly for investors, since they do not convey voting rights to ETF owners, but are sold at the full price of share, which reflects both cash flow rights and voting rights.

The rest of the paper proceeds as follows. Section 1 describes the data used and our approach to estimating ETF and underlying security phantom shares. Section 2 looks at how proxy votes cast are affected by phantom shares, presents evidence for the hedging mechanism in our findings, and compares the directional and operational shorting channels. Section 3 examines the implications of phantom shares on vote outcomes, vote pricing and firm governance/value. Section 4 discusses the findings and concludes.

1. Data and Methodology

1.1. ETF and Proxy Voting Data

The database used in our analysis is constructed from a number of different sources.[18] The ETF data, including holdings, is obtained from the CRSP Mutual Fund Database. We supplement the holdings data, prior to 2010 when CRSP holdings data is not available for all ETFs, using Thomson-Reuters Global Ownership database. Our initial ETF sample consists of all US Equity ETFs, excluding levered ETFs, from

[18] Appendix B contains a list and description of all variables used in the analysis.

the beginning of 2004 through the end of 2018. Panel A of Table 1 shows the summary statistics for the ETFs. The average ETF size is $1.752 billion, and the median ETF size is $147.2 million. Consistent with a largely passive investment approach, the average expense and turnover ratios are 0.515% and 50.96%, respectively.

To better characterize the underlying holdings of the ETFs and to add firm specific variables, we then merge the holdings data with CRSP and Compustat. We also add aggregate institutional holdings data from the Thomson-Reuters Global Ownership database as well as aggregate index fund ownership from the CRSP holdings database used above. Panel B of Table 1 has the average statistics of these firms including firm age and institutional ownership.

(~Insert Table 1 about here~)

While the databases mentioned above are more commonly used in academic research, our final data source, the ETF-level and firm-level voting data, may not be as familiar to academic readers, so we describe this database in greater detail. Specifically, we use N-PX data compiled by Institutional Shareholder Services (ISS), a leading proxy advisory firm, as the source of our ETF voting record information. In 2004, the SEC began requiring mutual funds and other registered management investment companies to disclose proxy vote records for the most recent twelve months ending June 30 of each year via the form N-PX with August 31 as the filing deadline.[19] The filing requires detailed disclosure on the policies and procedures used to guide proxy vote decisions, typically reported in the Statement of Additional Information (SAI), along with the proxy voting record for each security in each mutual fund portfolio.[20] The filing includes a brief identification of the matter voted on, information about whether the matter was proposed by the management or a shareholder, how the fund voted (e.g., for or against the

[19] Final Rule can be found in this link: https://www.sec.gov/rules/final/33-8188.htm. Details on the contents of N-PX filings are in the N-PX pdf instructions document available in this page: https://www.sec.gov/reportspubs/investor-publications/investorpubsmfproxyvotinghtm.html.

[20] For example, many State Street ETFs (SPDRs) report their voting records under the SPDR Series Trust (CIK: 0001064642) registrant. See, e.g., the individual vote records on each security held by 80+ SPDR ETFs in the 12-months period ending in June 2011 in the following report filed on August 30, 2011: https://www.sec.gov/Archives/edgar/data/1064642/0000950123-11-081354-index.htm.

proposal, or abstain; for or withhold regarding election of directors), and specifically whether the fund's vote aligned with management's recommendation or not.

In order to map the ISS N-PX data on WRDS with our ETF holdings data, we extract the ETF ticker information from the header of the N-PX filings using the WRDS SEC Analytics Suite. Specifically, we first extract the detailed series information, class/contract information, as well as the share class name, and ticker symbol for each N-PX filing, then map this data to the ISS N-PX records by matching the N-PX FileID to the SEC's accession number. This merged sample consists of 9,631,901 voting records on 6,556 different US public companies from 1,150 ETFs.

We then merge this fund-company level voting data with the company voting results dataset also compiled by ISS. This dataset provides information on the vote results reported in the 8-K or 10-Q filing subsequent to the firm's annual meeting. As ISS describes in their data manual, the vote results represent the summary of the voting by all investors, including ETFs. These results include the total votes for, against, abstaining, broker non-votes, and the vote outcome along with the ISS vote recommendation for each item. The dataset also includes the vote requirement threshold, an indication of how the percentage voting threshold necessary for a proposal to pass is calculated, which is primarily relevant for proposals requiring supermajorities. The vote outcome is derived from the comparison of support rate and required threshold disclosed by company. If the support rate is greater than or equal to the threshold, "Pass" is recorded, or "Fail" otherwise.[21]

We obtain two important dates for each annual shareholder meeting, the meeting date and the record date, from the ISS dataset as well. The meeting date on which the vote is held, and the record date on which the vote proxies are issued using the ownership of shareholders as of that date. We use the record date in the ISS vote results dataset to construct the actual ownership of ETFs and their holdings of individual securities in the ETF portfolio corresponding to their voting right claims.

[21] Vote outcomes can also be recorded as "Not Disclosed", "Withdrawn" or "Pending" for votes that are respectively not disclosed, eventually withdrawn, or currently pending.

1.2. Estimating Phantom ETF and Underlying Shares

While we explain our methodology for estimating phantom ETF and underlying shares in detail in Appendix A, in this subsection, we summarize our approach. As described above, the number of phantom ETF shares is simply the difference between the total number of ETF shares held by investors and the actual number of ETF shares created and outstanding. How can these two numbers differ? If existing shares of the ETF are sold short to other investors, this effectively increases the total number of shares held by investors. In other words, the number of ETF shares sold short is equal to the number of phantom ETF shares. Matching the daily ETF shares outstanding data to the biweekly ETF short interest data from Compustat, we estimate the phantom ETF shares.[22] The summary statistics for ETF shares outstanding, shares held short and short interest ratio are given in Panel C of Table 1.

To estimate the number of phantom underlying shares, we first multiply the number of phantom ETF shares by the ETF net asset value (NAV), which yields the phantom ETF assets under management (AUM). Multiplying this phantom ETF AUM by the ETF's percentage ownership of each underlying security, and then dividing by the price of the underlying security gives us the number of phantom underlying shares.

We then add the fund voting records on day *t–3* before the record date (i.e., on cum-date) of the company vote, to allow for settlement of traded shares. As the ISS fund vote file does not report the number of shares voted by the ETF, we assume that the ETF votes all of the underlying shares owned. From this, we assign all of the shares owned by the ETF in the underlying as being voted either for or against, using the ETF vote direction indicated in the ISS data. For each company-meeting-agenda item, we then aggregate all ETF shares voted for or against the item to create an aggregated measure of ETF votes for or against the agenda item. Lastly, as phantom shares would not have voting rights, we do not assign a vote direction to

[22] In previous versions of the paper, we also estimated phantom ETF shares by taking the difference between 13F holdings of the ETF and the ETF shares outstanding. While this estimate only provides a lower bound on phantom ETF shares (because not all holdings are included on the 13F) and is based on quarterly data, our results are similar using this alternative measure.

those shares. Instead, we only use the aggregate number of phantom shares implied by ETF ownership, in the underlying stock at *t–3* before the voting record date. This gives us our sample of company votes, where each agenda item from a meeting has a total number of ETF underlying shares voted for or against, and the total number of phantom shares.

(~Insert Table 2 about here~)

Table 2 gives the summary statistics for the phantom underlying shares, the overall voting data (i.e., votes for, votes against, and broker non-votes) and the voting by ETFs and index mutual funds. The overall average ETF percentage ownership of underlying firms across our sample is 3.489%. The phantom share average is relatively high in comparison. Of the total ETF share ownership (phantom plus regular ETF underlying shares, 4.073%), phantom share ownership of the underlying is 14%. The dollar or value-weighted measure of phantom shares indicates an almost three times larger percentage of the underlying shares outstanding. Further, as Figure 2 shows, more than a third of the stocks in the Russell 3000 have phantom shares greater that 1% of shares outstanding.

1.3. Estimating Phantom Shares: An Example

To illustrate our approach to measuring phantom shares, we examine a specific example of XRT, the S&P Retail Industry ETF, and Netflix, one of its holdings. Focusing on Netflix's April 5th, 2011 proxy voting record date,[23] the number of XRT shares outstanding on March 31st, 2011 cum-date (*t–3* trading days before that proxy voting record date) is 19.8 million. While this is the actual number of ETF shares that had been created on that date, we calculate the number of phantom ETF shares using the short interest ratio from the same date. On March 31st, 2011, the short interest ratio for XRT was 736%. Using this short interest ratio (736%) and the actual XRT shares outstanding (19.8 million), we calculate the number of phantom ETF shares as just over 145.7 million, so the total number of ETF shares owned, both regular and

[23] We focus on the record date for our analysis because it is on this date that the ability to participate in the proxy vote is determined. The actual proxy voting date for Netflix in this example was June 3rd, 2011.

phantom, is approximately 165.5 million.[24] Because only 11.9% of the total XRT shares owned have actually been created, this means only 11.9% of the ETF shares are backed by underlying securities held and voted by the ETF sponsor. Put another way, only 11.9% of XRT shares held by investors have associated voting rights.

Using this measure of the total ETF shares held by investors (outstanding ETF shares + phantom ETF shares), we can then estimate both the number of Netflix shares owned and voted by the sponsor and the number of phantom Netflix shares. As of March 31st, 2011, 1.29% of the XRT ETF assets were held in Netflix, translating to 456,956 total shares, of which 402,287 are phantom underlying shares and 54,669 are regular underlying shares which are voted. While the SEC N-PX filing only requires ETFs to disclose the direction of their vote (i.e., yes, no, or abstain) not the number of shares voted, for a small subset of the N-PX data, the actual shares of underlying security voted by the ETF are disclosed. As a result, we are able to assess our estimate of shares voted versus the actual number voted. In the case of XRT, they disclose that they voted 38,216 shares of Netflix, in line with the 54,669 regular underlying shares from our estimate above.[25]

[24] To account for the possibility that a single or a small number of ETFs may contribute to the firm level phantom shares, which in turn may affect our results, we run three robustness tests in Table IA.3. First, to account for outlier observations, we exclude the top (bottom) 10% of the phantom share distribution. Second, we create a firm level phantom shares Herfindahl index to account for the concentration of phantom shares from a given ETF, and include index in our main regressions. Finally, we include a top ETF fixed effect and cluster standard errors by top ETF and meeting. In each setting, our main results are unchanged.

[25] One possible explanation for the difference between the number of Netflix shares voted (38,216) and the number of actual Netflix shares held by XRT (54,669) is securities lending by ETF sponsor (State Street Global Advisors or SSGA). If some of the shares of Netflix held by SSGA are lent over the proxy voting record date, these shares would not be voted by SSGA but could be voted by the borrowers. While we abstract from the role of individual equity lending by ETF sponsors in this paper, we note that this is unlikely to affect our results for three reasons. First, as we show in Section 2.5, uninformed operational short-selling is the dominant mechanism for our findings. Second, we control for firm level short-sale/lending supply in our tests, effectively capturing the lending of these shares. Third, by abstracting from the shares lent, our estimate of phantom shares is conservative. In a recent work, Hu, Mitts, and Sylvester (2021) find that share lending is a greater concern after the end of our sample period – a change in SEC rules in 2019 has tilted the share lending-voting tradeoff towards lending for index funds.

2. Phantom Shares and Proxy Voting

2.1. Proxy Voting Analysis Setup

For each company-meeting date, our three main dependent variables are (i) the total number of shares voted for the agenda item, (ii) the total number of shares voted against the agenda item, and (iii) the total number of broker non-votes. Our primary independent variables are the phantom underlying shares and the underlying shares actually held by the sponsor, both aggregated across ETFs. These measures will be consistent across all agenda items for each company meeting. Our measures of ETF underlying shares voted for and ETF underlying shares voted against may vary across each agenda item of a company meeting, however, as different ETFs may vote in different directions. Finally, we scale all of our main dependent variables by the total number of potential votes outstanding, reported by ISS.[26]

We then remove routine and inconsequential agenda items. First, we exclude any agenda item where the vote requirement to pass is equal to 1%. We do this as these votes are formalities and could, in most cases, be passed by the votes of insiders. Second, we exclude any director election. We do this, as SEC rule changes regarding broker voting may cause uncertain behavior of broker non-votes. Prior to 2010, brokers were allowed to vote their shares in director elections. However, after 2010, the SEC no longer allowed the brokers to vote their shares in director elections. In a later test, we will repeat our main tests on the sample of only director elections. Third, we also exclude the ratification of auditors, as brokers can vote uninstructed on these items throughout our sample, as well as any item that did not pass or fail. Excluding director elections and applying these additional filters leaves us with a sample 49,568 company-meeting-agenda item observations.

As discussed above, we posit that phantom shares lead to sidelined votes. Hence, we do not assign the phantom shares as being voted for or against the agenda item; instead, we include the total number of

[26] In Tables IA.1 and IA.2, we repeat our baseline tests in Tables 3 and 4 using different bases for voting outcomes, respectively: (i) the reported base of the vote from ISS, (ii) votes for + votes against, (iii) votes outstanding excluding dual class firms, and (iv) shares outstanding excluding dual class firms. We find our findings to be robust to the alternative definitions of vote bases.

phantom shares in each of our main specifications. As the ETF underlying shares should be voted, we include ETF underlying shares voted for in the votes for regression, and ETF underlying shares voted against, in the for and against vote regressions. Finally, the aggregate measures of both phantom shares and ETF underlying shares are included in the broker non-vote regressions.

Each regression includes firm fixed effects, where standard errors are clustered by firm and meeting. We control for the size and age of the firm, as well as the book-to-market and return on assets. Additionally, we control for other categories of ownership in the firm: index mutual funds (IMF), and total institutional ownership. Furthermore, to address the potential effects of informed directional short-selling at the stock level, we control for short-sale supply. Lastly, to control for the potential of recent firm performance to affect our results, we include a six-month momentum measure for each firm-meeting. These requirements leave us with a total of 4,311 firms and 27,615 meetings in our votes cast sample.

2.2. Relation of Phantom Shares to Votes Cast

Table 3 presents our main results examining the relationship between phantom shares and shareholder votes cast in company meetings. The dependent variables in Columns 1, 2 and 3 are for votes, against votes and broker non-votes, respectively. In Columns 1 and 2 of Table 3, we find that an increase in the number of phantom shares leads to less voting, both for and against, consistent with our hypothesis that phantom shares will reduce overall yea and nay votes cast. We also observe that ETF underlying shares voted for (against) positively relate to overall for (against) votes in Column 1 (2), as would be expected.

(~Insert Table 3 about here~)

In Column 3 of Table 3, we examine the relationship between phantom shares and broker non-votes. As we discussed earlier, if the phantom underlying shares are held long as a hedge for the short (i.e., phantom) ETF share position, it is common practice for APs or arbitrageurs to abstain from voting those shares. As a result, an increase in phantom shares should result in an increase in the number of broker non-

votes cast. Column 3 provides evidence consistent with this hypothesis.[27] Importantly, we also find that our aggregate measure of ETF shares has no positive significant relationship with broker non-votes. As these regular ETF shares have both economic and ownership rights, we should not see a positive relationship between them and broker non-votes.

Overall, the results in Table 3 provide support for our initial hypothesis that for certain shareholders of ETFs, their shares do not carry ownership rights in the underlying stock, which in turn lead to less votes cast at company meetings.

2.3. Rule Change: Broker Voting on Non-Routine Matters

We extend our study of phantom shares and votes cast by exploiting two SEC regulatory changes (one occurred in 2010 and the other in 2012) that affected uninstructed or discretionary broker votes. Prior to 2010, director elections were categorized by the SEC as 'routine', thereby enabling brokers to vote uninstructed shares, such as phantom underlying shares. In 2010, this rule was amended to eliminate uninstructed broker share voting in director elections (Akyol, Raff, and Verwijmeren (2017)). In 2012, the SEC further restricted broker uninstructed share voting for additional governance proposal items including de-staggering the board of directors, implementing majority voting, eliminating supermajority voting, use of writer consents, rights to call special meetings, and opt outs of anti-takeover provisions.

In Table 4, we split our phantom share variables into pre- and post-2010 (Column 1), and pre- and post-2012 (Column 2). Examining the difference in the relationship between phantom shares and broker non-votes before and after these exogenous changes to the voting rights of brokers in director elections, provides further evidence of the causal nature of our proposed mechanism.

(~Insert Table 4 about here~)

In Column 1 of Table 4, we use a piecewise regression to examine the relationship between

[27] Our findings in Column 3 provide evidence that underlying shares are being used as a hedge as part of the shorting process, consistent with our findings in Section 2.4. If it were the case that phantom ETF shares are all backed by cash or futures (rather than by underlying shares), we would not observe a relationship between phantom shares and broker non-votes.

phantom underlying shares and broker non-votes around the SEC rule change. Prior to 2010, we find an insignificant coefficient on the phantom shares measure; a sign that brokers were actively voting their shares in director elections. After the rule change, we find a positive and significant coefficient on the phantom share measure. Repeating the analysis for the 2012 rule change in Column 2 of Table 4, we again find a positive and significant coefficient on the post-2012 phantom shares, after voting was restricted, and no relationship between phantom shares and broker non-votes prior to 2012. These findings corroborate the impact of phantom ETF and associated phantom underlying stocks on voting outcomes in Table 3, and address potential endogeneity concerns, using this plausibly exogenous regulatory change.

2.4. Hedging Mechanism

As described in the introduction, the potential mechanism through which underlying shares are sidelined from the proxy voting process is their use as a hedge for a short ETF position. In this subsection, we provide further evidence supporting this proposed hedging mechanism in two ways. First, we provide anecdotal evidence that APs, brokers, equity lenders and other institutional market participants have internal policies not to vote those securities that are part of a hedged position, out of a desire to avoid "empty voting" issues. Second, recognizing that there is variation within a portfolio as to the efficacy of different securities to hedge (i.e., higher correlation with the index), we examine if the proposed relationship between phantom shares and broker non-votes varies with the quality of the hedge.

To better understand the internal rules of the institutional market participants regarding the voting of hedged positions, we turn to the European Securities and Market Authority's (ESMA's) survey of such participants: "Call for Evidence on Empty Voting" on September 14th, 2011 (ESMA/2011/288). In this survey, the ESMA asked market participants about their voting practices in respect of securities used to hedge or as collateral:

> *"Internal policies relating to voting practices*
> *Q5. What kind of internal policies, if any, do you have governing the exercise of voting rights in respect of securities held as collateral or as a hedge against positions with another counterparty?"*

Consistent with the responses of other market participants reported in Appendix C, J.P. Morgan and International Securities Lending Association (ISLA) answered the above question as follows, respectively [emphasis added]:

> *"…J.P. Morgan has a separate internal policy* ***to abstain from voting in most instances of hedge trading positions, as they are temporary in nature****."*

> *"An ad hoc survey of lenders confirmed that* ***lenders have not, nor ever would exercise any voting rights in respect of securities held as collateral****. The majority of written governance policies are worded specifically to exclude the voting of collateral."*

While anecdotal, the answers to ESMA's questionnaire provide two important pieces of evidence. First, they confirm both the awareness of and sensitivity to empty voting issues on the part of market participants. Second, and more importantly, they confirm our conjecture that the securities held as a hedge for phantom ETF shares are not voted.

While this anecdotal evidence is compelling, if such policies are in place, empirically we should see stronger evidence of sidelined votes with securities that are more likely to be used as a hedge. In Table 5, we examine the effect that underlying shares likely to be held as a hedge have on the relationship between phantom shares and broker non-votes. For each stock in the ETF basket, we proxy the quality of the hedge using the 60-day rolling correlation between the stock daily returns and the returns of the ETF. Stocks in the ETF basket that have higher return correlations with the ETF are more likely to be used as a hedge since they represent a better hedge for the phantom ETF shares.

(~Insert Table 5 about here~)

Because a given stock is held by multiple ETFs, we construct a single stock-level correlation measure for each date by value- and equal-weighting the different correlations of that stock with the various ETFs that hold it. In Columns 1 and 2 of Table 5, we use an indicator variable of whether this value-

weighted or equal-weighted average stock correlation, respectively, is 'Above Median' as our measure of hedge quality. In Columns 3 and 4 of Table 5, we use a decile rank of this value- and equal-weighted stock correlation, respectively, as our measure of hedge quality. With these proxies in hand, in Table 5, we repeat our analysis of the determinants of broker non-votes from Table 3 controlling for hedge quality. Using either hedge proxy, we find that the increase in broker non-votes is stronger for stocks that are more likely to be held as hedge. This result is consistent with APs selecting more efficient hedging strategies and the securities associated with those hedges being less likely to be voted, in line with the near universal non-voting policy in hedge trading positions attested to by ESMA above.[28]

2.5. Operational vs. Directional ETF Shorting

Our analysis so far has focused on phantom shares regardless of the nature of the ETF shorting activity. However, ETF shorting could be "operational" or "directional." Unlike directional shorting, which consists of borrowing ETF shares with the goal to short sell them for speculative or hedging purposes, operational shorting is used by APs to provide liquidity to the ETF market. Evans et al. (2021) show that operational shorting is an important component of the overall short interest in ETFs and is an essential component of ETF liquidity provision.

As APs arbitrage the price difference between an ETF (i.e., market price) and its underlying securities (i.e., NAV) through the creation and redemption process, they adjust the supply of ETFs to accommodate investor demand. If there is excess demand for the ETF by investors, for example, the ETF price will be higher than the price of the underlying securities (NAV). This would create an arbitrage strategy for the APs to immediately sell ETF shares short (i.e., before the actual ETF shares are created) and to lock-in the arbitrage profit by buying a subset of the underlying securities with the promise to create the equivalent ETF creation units in the future.[29] By purchasing the sponsor-determined basket of

[28] In a related vein, Tepe (2016) discusses the broker-dealers use of "idle" customer assets, securities and uninvested cash remaining with the broker-dealer due to inactive trading.

[29] ICI (2014) provides more details of the ETF arbitrage process: https://www.ici.org/system/files/attachments/per20-05.pdf.

underlying securities at NAV, and then selling those ETF shares in the market, the AP both accommodates investor demand and earns profits based on the ETF vs. NAV price difference. The short ETF position will be closed as soon as the AP transfers the underlying basket securities to the sponsor (e.g., BlackRock) in exchange for new ETF shares (creation units). The creation process typically happens at the end of the trading day, or several days later, and in some instances does not happen at all (if the prices revert allowing the market maker to close short positions in the secondary market). It is important to note here that if the creation process is delayed by three or more days, this would automatically trigger a fail-to-deliver (FTD) position in these ETF shares, which we will also employ as a final robustness check.[30]

Repeating our analysis of broker non-votes by separating the shorting activity into "operational" and "directional" provides a further validation of the hedging mechanism discussed in Section 2.4. While directional short selling of ETFs may or may not involve a long position in the underlying, operational shorting is highly likely to be hedged for at least three reasons. First, APs are given regulatory exemptions in their liquidity provision role in the ETF arbitrage process enabling them to short sell ETF shares before they are created (Evans et al. (2021)), but those exemptions are only valid for liquidity provision and not for short positions that are part of a directional/unhedged strategy. Second, because ETF shares are typically created in large and discrete creation unit orders consisting of between 50,000 and 200,000 shares, an AP is "operationally" more inclined to hedge an operational-short ETF position with the underlying securities until she builds up the demand for a full future creation unit order. During that time, the remaining stocks in the ETF basket will be assembled to complete the creation unit order which would then be delivered to the ETF sponsor in exchange for the newly created ETF shares. Third, a common assumption in the theoretical literature on liquidity provision that is validated in the accompanying empirical literature is that market makers have a "preferred" inventory position and deviations from that preferred level is an important

[30] Short-selling, and even failing to deliver the short-sold shares, is allowed for market makers for bona fide market making purposes and market makers typically enjoy three more settlement days than typical investors: https://www.sec.gov/investor/pubs/regsho.htm.

consideration in the trades of liquidity suppliers.[31] In the context of ETFs, this would be consistent with APs hedging their short ETF positions with the underlying, especially given the ETF share creation process described above.

In Table 6, we examine the differences between operational and directional shorting. We start by splitting ETF shorting into its operational and directional components, and then analyze how much each of the two channels contributes to our findings. To separate the components, we use a measure of directional shorting, Total Demand Quantity (TDQ)[32] from IHS Markit Securities Finance database. The difference between total short interest from Compustat and this measure of directional shorting is our estimate of operational shorting. As reported in Panel C of Table 1, operational shorting (directional shorting) represents, on average, two-thirds (one-third) of the total ETF short interest which illustrates the significance the ETF liquidity provision. Translating these ETF 'operational' and 'directional' phantom share measures into similar measures for underlying securities, we then re-run our analysis of the determinants of broker non-votes from Table 3. The results are reported in Table 6.

(~Insert Table 6 about here~)

Our results in Column 1 of Table 6 show that operational shorting contributes to the increase in broker non-votes, while the coefficient on directional shorting in Column 2 of Table 6 is positive but insignificant. When including both measures in the same regression in Column 3 of Table 6, we do find that the magnitude of the coefficient of the 'operational' phantom share measure remains positive and significant, and that the coefficient of 'directional' phantom share measure remains insignificant (though flips sign). While the statistical significance of the *Operational Phantom Shares* coefficients is important, examining the magnitude is instructive here as well. In Column 3 of Table 6, the coefficient on the 'operational' phantom share measure is 0.924. The magnitude of this coefficient suggests a one-to-one relationship between phantom shares and broker non-votes, further evidence of our proposed hedging

[31] See, for example, Stoll (2003) and Glosten, Biais, and Spatt (2005) which review both the theoretical and empirical market microstructure literatures.

[32] TDQ measures the total ETF shares on loan to both Markit and non-Markit borrowers from Markit and non-Markit security lenders. It is the most expansive measure of direction ETF shorting from the Markit database.

mechanism.

These results are important for two reasons. First, they validate the suggested hedging-based vote-sidelining mechanism: as conjectured, the broker non-vote results are stronger for the operational shorting channel, which highly likely to be hedged. Second, as operational shorting of ETFs is purely for liquidity reasons and has no effect on the returns of the underlying as Evans et al. (2021) show, this analysis helps to rule out the possibility that our main tests are only picking up the sentiment from informed short sellers.

As a second test of the role of operational vs. directional shorting, we separate industry ETFs from all other ETFs. Huang, O'Hara, and Zhong (2021) find that industry ETFs are more likely to be used to hedge industry risk (i.e., directional shorting) by hedge funds and other traders than other ETFs. If such trades involve holding a single security long (e.g., Apple Inc.) and then shorting the industry risk of that position via an ETF (e.g., the Invesco QQQ broad technology ETF), there would not be a systematic sidelining of votes for the remaining stocks in the QQQ ETF basket. Thus, short interest in industry ETFs is an alternative proxy for directional shorting that is less likely to affect voting outcomes.

To begin our analysis using industry ETFs, we split our phantom shares variable into phantom shares that arise from industry ETFs (*Phantom Shares: Industry ETFs)*, and phantom shares that arise from all other ETFs (*Phantom Shares: Ex-Industry ETFs*). In Column 4 of Table 6, we show that while both industry and ex-industry phantom shares lead to an increase in broker non-votes, the coefficient on the ex-industry phantom shares is more significant and is twice as large as the coefficient on industry phantom shares. To further refine the industry ETFs proxy for directional shorting and given that APs may still use operational shorting to provide liquidity for industry ETFs, we separate the short interest by industry ETFs (and all other ETFs) into operational vs. directional and compute the equivalent phantom share measures at the underlying stock level. In Column 5 of Table 6, we report the results after splitting both industry and ex-industry phantom shares based on operational and directional short interest. The results are very clear: *Industry Phantom Shares: Industry ETFs - Directional* and *Phantom Shares: Ex-Industry - Directional* have insignificant coefficients, suggesting that directional short selling, more likely backed by a cash collateral is not much associated with sidelining votes. On the other hand, and consistent with our argument,

only operational shorting appears to be driving our main results, as shown in the coefficients on *Phantom Shares: Industry ETFs - Operational* and *Phantom Shares: Ex-Industry - Operational* being positive, with similar magnitudes, and statistically and economically significant. Taken together, Columns 4 and 5 of Table 6 provide additional evidence that operational shorting, not directional, is driving the sidelining of votes.

As a final test of our conjectured hedging mechanism, we use ETF FTDs to proxy for ETF operational shorting due to market making activities. When APs delay the creation of ETF shares to cover their operational short positions and given that market makers enjoy three more settlement days beyond the standard clearing times, operational short ETF positions that are not closed before the standard clearing times would automatically result in failure-to-deliver positions. Evans et al. (2021) document that ETF FTDs account of over 80% of fails in US financial markets in recent years and attribute the vast majority of these FTDs to AP operational shorting and market making activities. Therefore, we believe that ETF FTD measure would represent a conservative and independent proxy for the AP shorting activities which are likely hedged using underlying securities effectively sidelining these shares from the voting process. In Column 6 of Table 6, we use ETF FTDs to estimate the phantom shares generated from operational shorting. Consistent with our other evidence, this alternative proxy for operational shorting is strongly statistically related to broker non-votes.[33]

Finally, as a robustness check for the role of operational shorting/AP liquidity provision driving our results, we turn to a recent literature documenting short volume as a proxy for intraday liquidity provision by market makers (e.g., Comerton-Forde, Jones, and Putnins (2016)). Heavily traded ETFs that are more subject to demand shocks require ETF market makers to provide liquidity through short selling the ETF shares as described in Section 2.4.

To create this measure, we first extract the daily short volume information for each ETF using data

[33] It is also important to note that FTDs are a conservative measure of operational shorting, as fails are only recorded when an operational short position lasts more than three days. For this reason, reported fails are correlated with operational shorting that does not result in FTDs but represent an understated proxy for the overall operational shorting activity, which leads to the larger coefficient we observe in Column 6 of Table 6.

feeds from individual exchanges: NYSE, ARCA, NASDAQ, BATS, FINRA's TRF, and ORF. Then, we use the total ETF daily short volume as well as the ETF daily turnover, building on the idea that heavily traded ETFs are associated with higher market making intensity, as two alternative proxies for phantom ETF shares and use them to validate the baseline results in Tables 3 and 4. Table IA.4 provides the results using these two alternative proxies. The results are relatively unchanged using these two market-making-centric proxies, and our findings confirm the role of ETF market making behind phantom shares and the votes sidelining in the underlying securities. Overall, our findings in Tables 6 and IA.4 confirm that ETF market making and the related hedging activities associated with operational shorting is driving the phantom shares sidelining of proxy votes, and not directional short selling for speculative purposes.

3. Real Effects of Phantom Shares

In the previous section, we analyze the effect of phantom shares on the quantity of the votes cast. In this section, we examine the impact of phantom shares on firm outcomes. We start with the pass rates of important proposals, then test the value (or price) of shareholder voting rights (i.e., the voting premium), and finally examine the relationship between phantom shares and acquirer returns, as an application regarding the (impact of phantom shares on the) corporate governance of firms. Given the inefficiencies the phantom shares create in the voting process, we expect phantom shares to affect (and possibly flip) the passage of contentious (close-vote) items, increase the voting premium, and decrease acquirer returns.

3.1. Voting Outcomes: Proposal Pass Rate

While phantom shares may reduce votes for and against, and increase broker non-votes, the question remains if there is any material impact on voting outcomes.[34] Figure 2 shows that more than a third of the stocks in the Russell 3000 have phantom shares greater than 1% of shares outstanding. Building on these facts, we represent a direct test of the economic significance of the true effects of phantom shares on

[34] In recent papers, Brav, Cain, and Zytnick (2022) and Gantchev and Giannetti (2021) find evidence that retail/individual shareholders are also active and influential in corporate voting.

the corporate voting process.

We start our examination by looking at the total number of actual votes where phantom shares, if voted, would have altered the outcome. For this purpose, we first assign a vote (for/against) to the phantom shares in the same direction that the ETF votes its other shares, and then analyze the voting outcomes.[35] We then examine a subset of proxy proposals, where the vote percentage in favor or against is calculated relative to shares outstanding, as opposed to the total shares voted. In these cases where shares outstanding serve as the base for voting outcome percentage, there is no need to assign a vote direction to the phantom shares, because any sidelined shares (reflected as broker non-votes) would count as 'against' votes.

To assess the effect of phantom shares, we examine the contested (close) votes within the margins of 5% of passing threshold, which are likely to include critical and contentious items. We find that phantom shares, if voted, would have indeed shifted a meaningful number of agenda items. These items include crucial votes to adopt majority voting, to declassify the board of directors, and to require a majority vote for the election of directors. In particular, examining the contested management proposals (Listokin (2008)), we find that phantom shares would have changed the outcome in 3.67% of those votes, a material finding given that our sample consists of the earlier periods before the explosive growth in ETF assets and phantom share levels. Further, we include the contested shareholder proposals that address governance issues (Cunat, Gine, and Guadalupe (2012), and Bach and Metzger (2019)), and find that phantom shares, if voted, would have changed the outcome of 2.50% of the contested proposals.[36] Considering that ETFs continue to grow, we would only expect these numbers to increase, especially during times of crisis, heightened ETF short selling, and increased market volatility, the precise times when corporate control matters more.

We further test the economic implications of phantom shares by building on Bach and Metzger

[35] In the same spirit, Brav, Cain, and Zytnick (2022) set the participation rate of retail investors to zero in their analysis of retail shareholders' role in corporate voting.

[36] In our sample, we have 1,081 contested proposals that were within the margins of 5% of passing threshold, consisting of 600 management proposals and 481 shareholder governance proposals. See Column 4 of Table 7 for a regression analysis of the pass rates for these contested proposals.

(2019) who report that, over 2003-2016 in the US, approximately 75% more shareholder proposals have been rejected by a margin of one percent than proposals approved by a similar narrow margin. This is a relevant finding given that we document that a substantial number of stocks have phantom shares greater than 1% of shares outstanding, as Figure 2 shows. Repeating our above analysis of contested proposals within the narrower margins of 1% of passing threshold, we find that the outcomes of the 16.24% of 117 management proposals, and the 10.41% of 221 management and shareholder governance proposals would have flipped, should the phantom shares have been voted. This represents a powerful assessment of the significance and potential implications of phantom shares on the corporate voting process.

To better assess this economic significance, we examine the impact of phantom shares on voting outcomes in a regression setting after including several controls such as the actual votes cast by ETF and index funds. In Table 7, we estimate the probability of passing for shareholder proposals (Column 1), contested shareholder governance proposals[37] (Column 2), for items related to a broker voting rule change from 2012, to account for potential endogeneity (Column 3), and for contested proposals, including both the management and the shareholder governance proposals (Column 4). All variables are standardized, and coefficients are presented as odds ratios,[38] so coefficients greater (less than) than one indicate an increase (decrease) in the probability of an item passing. Similar to Table 3, we designate the hypothetical voting direction of phantom shares based on the ETF's voting decision (for or against) for the underlying shares that were actually held by the sponsor.

(~Insert Table 7 about here~)

The results confirm that, in the case of both shareholder proposals (Column 1 of Table 7) and contested shareholder governance proposals (Column 2 of Table 7), an increase in phantom shares decreases the probability of shareholder proposals passing. These phantom shares of the underlying securities are owned by ETF that would otherwise have cast their vote in favor of the proposal, and

[37] Following Bach and Metzger (2019), we define the contested proposals as those with *ex post* vote share being between 45% and 55%. These proposals exclude director votes and items requiring 1% of votes to pass.

[38] The odds ratios reported represent a one standard deviation increase in the independent variable.

consequently change the outcome of the vote. The implications are significant. In our sample, shareholder proposals (contested shareholder governance proposals) pass 20% (35%) of the time. Our results in Column 1 (2) of Table 7 suggest that a one standard deviation increase in phantom shares voted for would lower the pass rate to 12% (25%).[39]

To further identify the effect of phantom shares and their economic implications on vote outcomes, we repeat the analysis for those governance items included in the 2012 rule change examined in Table 4, and report the results in Column 3 of Table 7.[40] Using this regulatory change allows us to address potential endogeneity concerns in this test of voting outcome. Before 2012, we find no effect of phantom shares on the outcome of these governance proposals consistent with brokers voting shares used as a hedge. After 2012, however, when brokers are no longer able to vote uninstructed shares, we see that a one standard deviation increase in phantom shares voted for, causes the pass rates of these governance items to drop by 20%, from 62% to 42%. It is notable that in the cases of these governance items (post-2012), the vote outcome probability would have moved, on average, from likely passing to likely failing, absent phantom shares.

Finally, we explore the choice of the denominator of vote measures in assessing the effect of phantom shares on vote outcomes. In Columns 1 to 3 of Table 7, we exclude any item where shares outstanding is used to calculate the percentage of support, and ultimately to decide if the vote passed or failed, because a broker non-vote will act as de-facto against vote since it adds to the denominator but does not affect the numerator. In Column 4 of Table 7, we exploit this effect of the vote measure denominator to further test the effect of phantom shares on pass rates.[41] Using a sample of contested proposals, which

[39] Shareholder votes (e.g., for a particular shareholder proposal) could be informative and be perceived as an important signal to act on by the management, even though that vote fails. For instance, analyzing activist pension plans, Del Guercio and Hawkins (1999) find that even shareholder proposals that fail to get a majority of voting support are associated with significant changes at target firms, such as higher management turnover. Focusing on shareholder proposals on environmental and social (E&S) issues, He, Kahraman, and Lowry (2022) argue that the shareholder votes in those proposals are informative by illustrating that higher support in failed E&S proposals predicts subsequent E&S incidents.

[40] While Table 4 also examines broker non-votes at director elections, we do not analyze such elections in Table 7, given the very high pass rates in these elections (97.5%).

[41] We thank Alon Brav for suggesting this specification.

includes both the management proposals (Listokin (2008)) and the shareholder governance proposals (Bach and Metzger (2019)), we interact our total phantom shares measure with items where the base is shares outstanding. Consistent with broker non-votes acting as an 'against' votes in these settings, we confirm that irrespective of the direction the ETF sponsor may have voted their shares, the presence of phantom shares reduces the likelihood that contested proposals pass when the base is shares outstanding.

Overall, when shares of the underlying securities are not voted because they are held by the APs as a hedge as described above, the phantom shares that would have been voted in favor of a proposal, negatively affect the probability of the proposal passing. Consequently, we conclude that phantom shares have real and material effects on the corporate voting process.

3.2. Relation of Phantom Shares to Voting Premium

If phantom shares are reducing the number of potential votes being cast, then the likelihood of any one shareholder being the tipping point vote will increase. As such, we would expect the value of a vote to increase for firms with more phantom shares, especially around contentious meetings. To further examine this, we calculate the daily voting premium following the method in Kalay, Karakaş, and Pant (2014). This method relies on two observations: (i) a stock is a package of two components: cash flow rights and the control/voting rights (Manne (1964)), and (ii) option prices derive their value from the cash flows of the underlying stocks, but not from the voting rights. Hence, subtracting the price of a non-voting stock synthesized using options from that of the underlying stock, we obtain the value of voting rights in the stock. In order to compare the voting premium over time and across companies, we normalize the price differential between the underlying (voting) stock and the synthetic (non-voting) stock by the price of the underlying stock.[42]

[42] Voting premium reflects private benefits consumptions and associated managerial inefficiencies, priced by the market. Gurun and Karakaş (2022) and Karakaş and Mohseni (2021) use the same voting premium measure we employ. The former documents that the voting premium increases with the unexpectedly negative earnings, particularly around the shareholder meetings, consistent with an increased probability of capital gains from improving the inefficient management of the firm. The latter finds that firms with staggered boards on average have higher voting premium, which is in line with the entrenchment view on staggered boards. See Levit, Malenko, and Maug (2021) for a recent theory of the voting premium and a survey of the relevant literature.

Following Kalay, Karakaş, and Pant (2014), we measure the median voting premium for each firm [–5,0] trading days before the cum-date, which is 3 trading days prior to the record date for the upcoming shareholder meeting. As robustness, we also use a [–5,5] window around the cum-date. Kalay, Karakaş, and Pant (2014) show that the voting premium increases around special meetings and contentious annual meetings. Following this, we first include in the regression an indicator variable of whether or not the meeting is a special meeting. Next, we also identify and include items in annual meetings that are likely to be contentious. To proxy for the "contentiousness" of the meeting, we use the fraction of all meeting items that meet the definition of *critical*. An agenda item is defined as "critical", if it is in an annual meeting with any one of the three scenarios: (i) contested proposals (i.e., the absolute vote difference between votes required for the item to pass and the votes cast was less than 5% margin), (ii) proxy contests, or (iii) ISS recommended voting against.

(~Insert Table 8 about here~)

In Table 8, we find that voting premiums increase with the phantom shares, around the record date for special meetings (Column 1), and for annual meetings that are more contentious (Column 2). In Column 1 of Table 8, consistent with Kalay, Karakaş, and Pant (2014), we observe an increase in the voting premium of 0.11% around special meetings, compared to annual meetings. The average voting premium for the sample of all meetings analyzed in Column 1 of Table 8 is 0.10% (untabulated). Examining the interaction between the phantom share variable and the special meeting dummy, we find an incrementally large and significant increase in the voting premium. Indeed, a one standard deviation increase in phantom shares around a special meeting increases the voting premium by a further 0.17%; resulting in an overall increase in the voting premium of 0.24%.[43] In annualized terms, this overall increase of 0.24% in the voting premium around special meetings with high number of phantom shares corresponds to approximately 1.4-1.6% of the stock price.[44]

[43] We obtain 0.24% by adding the coefficients of interest (i.e., coefficients of *phantom shares*, *special meeting*, and *special meeting x phantom shares* variables) from Column 1 of Table 8 (–0.04% + 0.11% + 0.17%).

[44] Voting premium for options with maturity T can be annualized with the following formula (Kalay, Karakaş and Pant (2014): $1 - (1 - \text{voting premium})^{365/T}$. Given that the median (average) maturity of options employed in our

(~Insert Table 9 about here~)

Analyzing whether phantom shares do predict special meetings (or contentious meetings in general), we find no positive effect of critical items (Table 9) on voting premiums. This suggests that the potential selection bias in firms with more phantom shares is unlikely to explain the increase in the voting premium in the presence of phantom shares.

Together with the earlier results with the vote outcomes, our findings suggest that phantom shares make the voting process less efficient by reducing the shares voted (and increasing the broker non-votes), which in turn is reflected in more increase in the voting premium particularly around the contentious shareholder meetings.

3.3. Phantom Shares and Acquirer Returns

As a final exploration in the implications of phantom shares and corporate voting, we look at relationship between phantom shares and corporate governance, specifically acquirer stock returns in Table 10.

(~Insert Table 10 about here~)

A large literature analyzes stock market reactions to merger and acquisition (M&A) announcements, interpreting them as evidence on whether M&As create value for shareholders. A general finding is that M&As often do no add much shareholder value, particularly for the acquiring firms (see, e.g., Andrade, Mitchell, and Stafford (2001), and Bouwman, Fuller, and Nain (2009)). Andrade, Mitchell, and Stafford (2001, p.111) and Bouwman, Fuller, and Nain (2009, p.648) also find that the negative abnormal announcement returns for acquiring firms is driven by stock acquisitions. A reason for these findings is the poor governance of the acquiring firms in which under monitored/disciplined managers may take value-destroying acquisition decisions that may benefit themselves on the expense of the shareholders (see, e.g., Jensen (1986), Morck, Shleifer, and Vishny (1990), Lang, Stulz, and Walkling (1991), and

analysis in Column 1 of Table 8 is 55 (63) days, the corresponding annualized voting premium for the overall increase in the voting premium of 0.24% is 1.58% (1.38%) of the stock price.

Masulis, Wang, and Xie (2007)).

Because phantom shares give the holder cash flow rights but no voting rights, we might expect those firms with large phantom share ownership to underperform in acquisitions as firm governance is hindered by the lack of voting rights. Put another way, the distortion effect of phantom shares in shareholder voting we documented above, may further weaken the monitoring and discipline over the firms, which in turn may lead to value loss for shareholders. From one perspective, increased phantom shares of the underlying in tantamount to the creation of a dual share class with the same cash flow rights but no voting rights.

The dependent variable in Table 10 is a Carhart four-factor alpha (i.e., alpha from Fama-French three-factor model plus momentum factor) obtained from a daily regression from days *t–10* to *t+1*, or *t–1* to *t+1*, where *t* is the M&A announcement date.

Looking at the results in Panel A of Table 10, we see that high levels of phantom shares interacted with poor firm governance (proxied by E-index of Bebchuk, Cohen, and Ferrell (2009)) are associated with worse M&A performance, particularly in M&As financed with stock. These results suggest that phantom shares are associated with reduced value for shareholders.

We further examine the distortion in shareholder voting and its effect on M&A performance using the 20% share issuance rule in the US. The rule requires a shareholder vote for any merger that is financed with stock and the firm intends to issue more than 20% of shares outstanding. This setting was previously used by Li, Liu, and Wu (2018) to show that shareholder voting mitigates agency problems in corporate acquisitions.[45] Focusing on the M&As in the UK where shareholder voting is mandatory for large acquisitions, Becht, Polo, and Rossi (2016) also find that shareholder voting results in higher acquirer announcement returns.

In Panel B of Table 10, we follow Li, Liu, and Wu (2018) to examine the interaction between phantom shares and the returns around M&As that require a shareholder vote. In Column 1 (4) of Panel B

[45] We thank Kai Li for generously providing their share issuance variable.

of Table 10, we use the full sample of public (public and private) stock only mergers. In Columns 2 and 5 (3 and 6), following Li, Liu, and Wu (2018), we use a sample of mergers where the percent of shares issued falls within a band of [5%-35%] ([10%-30%]). Consistent with Li, Liu, and Wu (2018), for the full sample and the [5%-35%] sample we also use weighted least squares (WLS), where the weight is the inverse of the distance to the 20% threshold. This gives a larger weight to the observations closer to the threshold.

In Panel B of Table 10, consistent with the distortion in voting caused by phantom shares, we find lower acquirer returns for M&A's where the share issuance is above 20% of shares outstanding and require a shareholder vote. In Column 4 of Panel B of Table 10, which most closely replicates Li, Liu, and Wu (2018), consistent with the positive benefits of shareholder voting documented in Li, Liu, and Wu (2018), we find that mergers requiring a vote have an announcement return that is 3.73% larger. Examining the interaction between phantom shares and shareholder voting, however, we find that a one standard deviation increase in phantom shares almost completely negates the positive benefits from requiring a shareholder vote. Here, the coefficient on the interaction between phantom shares and *Above 20* is –3.28% and significant at the 5% level. We observe a similar pattern across other specifications as well. Overall, this result is important as we are able to exploit a regression discontinuity setup illustrating that large increases in phantom shares almost completely negate the positive effects from requiring a shareholder vote in mergers.

Our results are consistent with the notion that phantom shares lead to inefficiencies in the shareholder voting, which in turn negatively affects the acquiring firm's value, particularly due to reduced effectiveness in monitoring/disciplining the entrenched managements in firms. Considering the phantom shares as plausibly exogenous instrument for the ownership and control of the firms, our findings also complement Schmidt and Fahlenbrach (2017) finding that firms make value-reducing acquisitions following exogenous increases in passive institutional ownership. Our findings are also consistent with the conjecture of Martin and Partnoy (2005) that encumbered shares, which violate the one-share/one-vote rule economically and/or legally, may substantially distort the market for corporate control and lead to ill-advised approval of mergers and acquisitions.

4. Discussion and Conclusion

This paper analyzes the impact of ETF shorting on the shareholder voting of underlying securities. We introduce a novel measure of the wedge created between the economic ETF ownership and the voting rights of ETF underlying shares, which we call phantom shares, and analyze the implications of these phantom shares on the voting process, voting outcomes, voting rights premiums, and firm performance.

We find that phantom ETF shares are costly for investors, since they do not convey voting rights to ETF owners, but are sold at the full price of share, which reflects both cash flow rights and voting rights. Phantom shares also seem to create inefficiencies within the voting process by increasing the broker non-votes, and decreasing both the shares voted for and the shares voted against in the shareholder meetings. This becomes particularly important in cases with close votes. Relatedly, we find phantom shares to be positively related to the voting premium, particularly during the meetings with contentious votes.

Our findings highlight an important phenomenon given the recent surge of ETFs and have important policy implications. Specifically, the sidelining of underlying shares from the proxy voting process due to ETF liquidity provision and market making activities creates inefficiencies in the exercise of control rights, and in turn the corporate governance and market for corporate control. These inefficiencies are likely to be exacerbated for the firms with phantom shares particularly during times when markets are bearish and/or when the votes are critical. This fragility is distinct from that discussed in Bhattacharya and O'Hara (2018), who argue that ETFs also have the potential to alter the informational efficiency of underlying markets and introduce fragility via herding. We believe our findings with ETFs are particularly important when considered against the simple alternative of investing in index funds which are backed fully by the underlying securities held by a custodian and voted by the sponsor. In other words, index funds do not suffer from a similar lack of voting rights.

The US proxy voting system needs to be updated, as various inefficiencies and inaccuracies have been discussed in the corporate law literature (see, e.g., Kahan and Rock (2008), Barrett (2009), Donald (2011), and Brooks (2014)). Similarly, there is a need for a robust regulatory framework for ETFs (Hu and

Morley (2018)). We believe our findings may inform efforts to create these related systems and frameworks. In particular, our results highlight the fact that existing financial regulation seems to focus more on cash flow rights, at the expense of other contractual rights of the shareholders, such as right to vote. Additionally, while the SEC's proxy voting regulatory focus in recent years has been on curbing potential overvoting, our results suggest that the pendulum may have swung too far the other way, with market participants are leaving shares unvoted to avoid both the appearance of and the regulatory liability associated with "empty voting".

We also believe the phantom shares measure we have introduced here may prove helpful to academic researchers as a plausibly exogenous instrument for the change in ownership/control. We have exploited this aspect of phantom shares in our analysis of the acquirer returns but there are numerous other potential applications. A similar approach utilizing phantom shares could be adopted in addressing important and interesting issues in corporate finance/governance.

Appendix A: Phantom Share Variable Construction

In Section 1.2 we provide a brief description of the calculation of the phantom share variables. In this Appendix, we start with a short numerical example of phantom shares, then go into further detail about the specifics of how we create the variable and the data sources we use.

With the precise daily ETF Holdings and ETF short interest data, the calculation of our phantom share variable would be quite simple. To illustrate this, let us assume that ETF A has a short interest ratio of 50%, owns 10,000 shares of Firm A on the record date for Firm A's annual meeting, and is the only ETF that holds Firm A. In order to obtain the number of phantom shares on the record date of the annual meeting, we simply multiply the short interest ratio of 50% by the 10,000 shares owned, to arrive 5,000 phantom shares of Firm A. If Firm A has 100,000 shares outstanding, then in our regressions *ETF Underlying Shares* would be 10% (10,000 ÷ 100,000), and *Phantom Shares* would be 5% (5,000 ÷ 100,000). *ETF Underlying Shares – Voted For (Against)* would be 10% if the ETF votes for (against) an agenda item. If multiple ETFs hold the stock, we simply repeat this step for each ETF that owns Firm A on the record date. The formula for phantom share calculation can be seen below, where *i* represents the firm, *t* represents the ETF, and *d* is the record date of the annual/special meeting:

$$Phantom\ Shares_{i,d} = \sum_{i,t,d=1}^{N} Shares\ Owned_{i,t,d} \times ETF\ Short\ Interest_{t,d}$$

The above example would require us to have daily ETF short interest data and daily ETF holdings. As we do not have such data, we take steps to ensure that our phantom share measure is as accurate as possible. We begin with the most recent ETF holdings data observation, which gives the number of shares of the underlying held by the ETF. Because the holdings report date does not necessarily coincide with the voting record date, we need to estimate the shares of the underlying held by the ETF on the record date of interest.

First, we replicate the month/quarter end holdings data using the ETF price, and shares outstanding of the ETF on the report date, and the percentage weight in the portfolio. We do this, as we will have to estimate fund holdings around the record date, and need to ensure that we are able to accurately estimate holding values using external data. As ETF shares outstanding varies slightly across the data providers, we replicate the ETF holdings using three different data sources: CRSP, Morningstar, and Bloomberg. The percentage weight in the portfolio for each stock is another possible source of error, as in some cases holdings with smaller weights will be less accurate due to rounding of the reported weight in the holdings data. To account for this, we also compute the weights of the holdings using the reported dollar values of holdings, and total net assets of the fund. We then use all combinations of the holdings weights and shares

outstanding measures to replicate the fund holdings in the underlying. We take the most accurate and use that measure of shares outstanding and holdings weigh until the next ETF report date. We drop any observation where we are not able to replicate the holdings value within a 5% margin of the reported holdings in CRSP.

Once we have the number of shares held at month end, we then compute the number of shares owned by the ETF on the cum-date which is three trading days before the record date, to allow for settlement of traded shares. First, we adjust the portfolio weight of each stock based on the return of the stock from the report date of fund holdings, to the cum-date of the company meeting. The shares of stock held by the ETF is then calculated using this new weight, the daily shares outstanding, NAV of the ETF, and price of the stock. Next, we then calculate the number of phantom underlying shares. The Compustat Supplemental short interest file reports short interest biweekly, and we take the most recent reported short interest for the ETF. To calculate the short interest ratio of the ETF, we scale the short interest of the ETF by the shares outstanding from the provider (Bloomberg, CRSP, Morningstar) that gave the closest match for the fund holdings. With the ETF short interest ratio in hand, we simply multiply the number of ETF shares of the stock held on the record date by the short interest to obtain the number of phantom shares. Finally, we then sum over all the ETFs that hold a particular firm on the cum-date to obtain our ETF and phantom share ownership variables for the proxy vote.

Appendix B: Variable Definitions and Sources

Variable Name	Definition
Fundamental Data (Source: CRSP and Compustat)	
Six-Month Momentum	Return of the stock over the six months prior to the shareholder meeting.
Book-to-Market	Market value of equity / Book value of equity.
Assets	Total firm assets.
Return on Assets	Net income / Total assets.
Firm Age	Number of years since the IPO of the firm.
Institutional Ownership	Percentage of shares outstanding owned by institutions, excluding ETFs, index funds, and blockholders.
Short-Sale Supply Ratio	Short Interest as a fraction of short-sale supply, proxied by the level of institutional ownership.
ETF-Stock Return Correlation (vw/ew)	The value (equal) weighted return correlation between the firm and all of the ETFs that own shares.
ETF Data (Source: CRSP Mutual Fund Database)	
Total Net Assets	Total net assets of the fund.
Return	Return of the ETF in the reporting month.
Expense Ratio	Ratio of the fund's annual operating expenses by the average dollar value of its assets under management.
Turnover Ratio	The minimum of aggregated sales or purchases of securities, divided by the average 12-month total net assets of the fund.
Fund Age	Number of years since the fund was introduced.
Net Flows	Net flows into the ETF in the month that holdings were reported.
ETF Ownership Data (Source: CRSP, Bloomberg, Morningstar)	
ETF Shares Outstanding	Number of ETF shares outstanding reported by CRSP/Bloomberg/Morningstar.
ETF Shares Held Short	Short interest of the ETF taken from Compustat.
ETF Short Interest Ratio (SIR)	ETF shares held short / ETF shares outstanding (reported on the same day as the holdings of the ETF).
ETF SIR: Directional Shorting	ETFs held short using share lending date from Markit / ETF shares outstanding (reported on the same day as the holdings of the ETF).
ETF SIR: Operational Shorting	The difference between ETF short interest and ETF short interest: directional shorting. It is set to zero if ETF SIR: directional shorting is greater than ETF SIR.
Operational SIR	ETF SIR: Operational Shorting / ETF SIR (% of ETF SIR).
Industry ETF SIR	ETF SIR reported for a sample of only industry ETFs.
Ex-Industry ETF SIR	ETF SIR reported for a sample of all non-industry ETFs.
ETF Underlying Shares	Number of shares in the underlying firm held by all ETFs in our sample.
IMF Underlying Shares	Number of shares in the underlying firm that are held by all Index Mutual Funds in our sample.
Phantom Shares	Total number of phantom underlying shares implied by ETF short interest, as a percentage of shares outstanding.
Phantom Shares: Voted For (Against)	Total number of phantom underlying shares implied by ETF short interest, where the ETF voted for (against) the agenda item, as a percentage of potential votes.
Phantom Shares: Directional Shorting	The number of phantom shares calculated using share lending data from Markit. Directional ETF short interest is calculated as shares on loan, as reported by Markit, divided by shares outstanding.
Phantom Shares: Operational Shorting	The difference between the phantom shares: directional shorting, and our main phantom shares variable. It is set to zero if phantom shares: directional shorting is greater than phantom shares.
Phantom Shares: Operational Shorting	The difference between the phantom shares: directional shorting, and our main phantom shares variable. It is set to zero if phantom shares: directional shorting is greater than phantom shares.

Variable Name	Definition
ETF Ownership Data (Source: CRSP, Bloomberg, Morningstar) (continued)	
Phantom Shares: Industry ETFs	Phantom shares calculated using only short interest in industry ETFs.
Phantom Shares: Ex-Industry ETFs	Phantom shares calculated using short interest from all ETFs, excluding industry ETFs.
Phantom Shares: Industry ETFs - Directional	Phantom shares: directional shorting calculated using only short interest in industry ETFs.
Phantom Shares: Industry ETFs - Operational	Phantom shares: operational shorting calculated using only short interest in industry ETFs.
Phantom Shares: Ex-Industry ETFs - Directional	Phantom shares: directional shorting calculated using short interest from all ETFs, excluding industry ETFs.
Phantom Shares: Ex-Industry ETFs - Operational	Phantom shares: operational shorting calculated using short interest from all ETFs, excluding industry ETFs.
ETF Fail-to-Deliver (FTD)	Number of ETF fail-to-deliver (in shares) reported by the National Securities Clearing Corporation.
ETF Fail-to-Deliver Ratio	Defined as the ratio of the ETF fail-to-deliver divided by the total ETF shares outstanding.
Phantom Shares: FTDs	Phantom shares created using the ETF fail-to-deliver ratio, rather than ETF short interest.
Voting Related Data (Source: ISS, OptionMetrics)	
Votes For	Total number of votes "for" the agenda item, as a percentage of potential votes.
Votes Against	Total number of votes "against" the agenda item, as a percentage of potential votes.
Broker Non-Votes	Total "broker non-votes" for the agenda item, as a percentage of potential votes.
Phantom Shares: Voted For	Number of phantom shares associated with ETFs that voted for the agenda item, as a percentage of shares outstanding.
Phantom Shares: Voted Against	Number of phantom shares associated with ETFs that voted against the agenda item, as a percentage of shares outstanding.
ETF Underlying Shares: Voted For	Number of underlying shares owned by ETFs that voted for the agenda item, as a percentage of shares outstanding.
ETF Underlying Shares: Voted Against	Number of underlying shares owned by ETFs that voted against the agenda item, as a percentage of shares outstanding.
IMF Underlying Shares: Voted For	Number of underlying shares owned by Index Mutual Funds that voted for the agenda item, as a percentage of shares outstanding.
IMF Underlying Shares: Voted Against	Number of underlying shares owned by Index Mutual Funds that voted against the agenda item, as a percentage of shares outstanding.
Shareholder Sponsored	Takes the value of 1 for agenda items proposed by shareholders, 0 otherwise.
ISS Against	Takes the value of 1 for agenda items opposed by ISS, 0 otherwise.
Voting Premium	The value of the shareholder voting rights, defined by the measure introduced by Kalay, Karakaş, and Pant (2014). The premium is taken as the median value of the daily value of voting rights from days *0* to *t–5* (or alternatively from days *t–5* to *t+5)* around the cum-date, which is three trading days prior to the record date for shareholder meeting (to allow for settlement of stock trades).
Shares Outstanding Base	Takes the value of 1 if the base used to calculate the pass rate of the agenda items is shares outstanding, 0 otherwise.
Special Meeting	Takes the value of one if the firm meeting is a special meeting, 0 otherwise.
Meeting Contentiousness	The fraction of all meeting items that meet the definition of *critical* item. An agenda item is defined as "critical", if it is in an annual meeting with any one of the three scenarios: (i) contested proposals (with *ex post* vote share being between 45% and 55%), (ii) proxy contests, or (iii) ISS recommended voting against.
Merger and Governance Data (Source: SDC Platinum, ISS RiskMetrics Governance Data)	
E-Index	E-index developed by Bebchuk, Cohen, and Ferrell (2009).
Same Industry	Takes the value of 1 if the acquirer and target are in the same industry.
Deal Value	Total deal value.
Above20	Takes the merger is an all-stock deal and the acquiring firm issues more that 20% of shares outstanding, 0 otherwise. Share issuance data is taken from Li, Liu, and Wu (2018).

Appendix C: Feedback to ESMA's Questionnaire on Empty Voting

European Securities and Market Authority (ESMA) conducted a "Call for Evidence on Empty Voting" on September 14th, 2011 (ESMA/2011/288). ESMA was fact-finding for possible rule-making and coincidentally asked institutional market participants the following question relevant to our paper:

- "*Internal policies relating to voting practices*
  Q5. What kind of internal policies, if any, do you have governing the exercise of voting rights in respect of securities held as collateral or as a hedge against positions with another counterparty?"

ESMA's "Feedback Statement" on "Call for Evidence on Empty Voting" on June 29th, 2012 (ESMA/2012/415) summarizes the responses to question #5 above as follows:

- "*Only 11 interested parties fully replied to this question, while a few respondents just declared they have no internal policy on the exercise of voting rights within their normal business activity. Five respondents asserted that the voting right attached to these securities is not exercised. Three contributors affirmed that they (or their members) recall (or encourage to act accordingly) any lent shares before the record date, especially when voting in contentious situations or for significant issues. Other replies more specifically stated that e.g. the voting rights cannot be exercised in order to benefit from trading book exemption; or they discouraged the borrowing of securities for the purposes of voting; or simply the rights remain assigned to the beneficial owner.*"

Some excerpts from the individual responses of the institutions to ESMA's question #5 above are below (sourced from ESMA's website, available upon request):

- **J.P. Morgan**
  "*J.P. Morgan adheres to industry standards and practices as referenced herein in relation to not facilitating the borrowing of securities for the purposes of voting. Through its Prime Brokerage business, it is able to prevent voting in respect of any borrowed securities that it lends to hedge fund clients, to the extent that they are retained on its Prime Brokerage books and records. J.P. Morgan also has strict vetting procedures around counterparties to which it is willing to lend securities within its Equity Finance business.*

  In addition, the Worldwide Securities Services division of J.P. Morgan does not permit lending clients to vote on securities held as collateral in its securities lending programme. Furthermore, through our derivatives activity, clients are aware that no voting rights are passed through the contract and J.P. Morgan has a separate internal policy to abstain from voting in most instances of hedge trading positions, as they are temporary in nature."

- **International Securities Lending Association (ISLA)**
  "*An ad hoc survey of lenders confirmed that lenders have not, nor ever would exercise any voting rights in respect of securities held as collateral. The majority of written governance policies are worded specifically to exclude the voting of collateral.*"

- **BNP Paribas**
  "*With regard to the shares held for our own account in a trading book, the voting rights attached to the shares held as hedging of such positions cannot be exercised if it is intended to benefit trading book exemption. If the voting rights are exercised and consequently the exemption of trading book not applied, the Transparency declarations have to be provided in accordance with French law (threshold disclosures and, if applicable, disclosures on securities lending before general meeting).*

With regard to the shares owned in collateral for client's transactions, the voting rights should not be used by the credit institution or investment firm."

- **Hermes Equity Ownership Services**
  "*Given our approach to see such activity as market abuse, it should not come as a surprise that we do not vote stock held as collateral or a hedge*."

- **Aviva Investors**
  "*We do not vote these shares*"

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Figure 1: Voting Implications of Stock, Mutual Fund and ETF Ownership

The figure illustrates the voting implications of investing $1 into: (i) a common stock, (ii) a mutual fund, and (iii) an ETF.

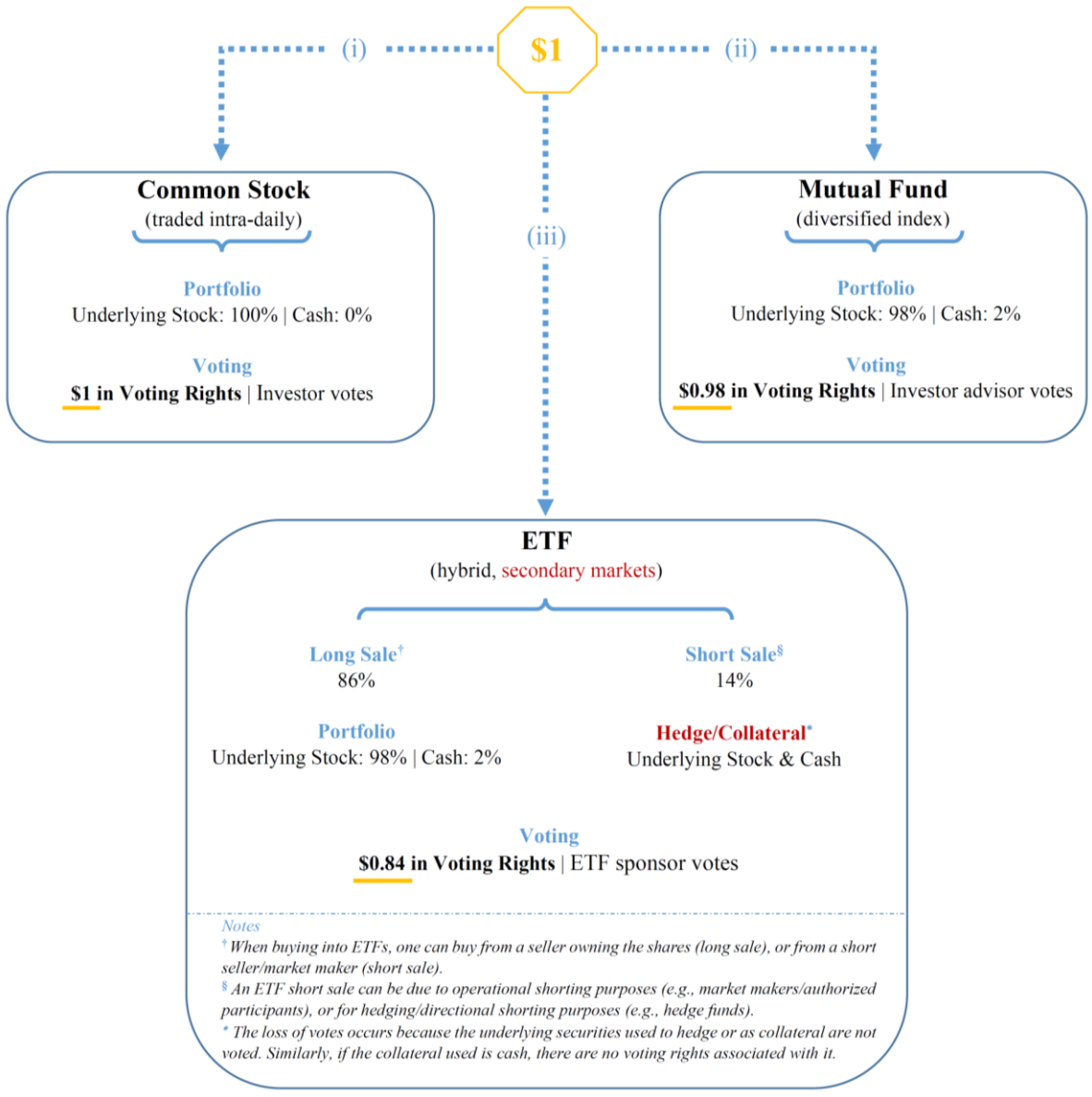

Figure 2: Number of Firms with Significant Phantom Shares

The figure illustrates the total number of firms with phantom shares greater than 1% of shares outstanding (solid, blue line), and the total number of Russell 3000 firms with phantoms shares greater than 1% of shares outstanding (dashed, red line), from January 2004 to December 2021. Firm level phantom shares are computed using month-end ETF short interest and holding information.

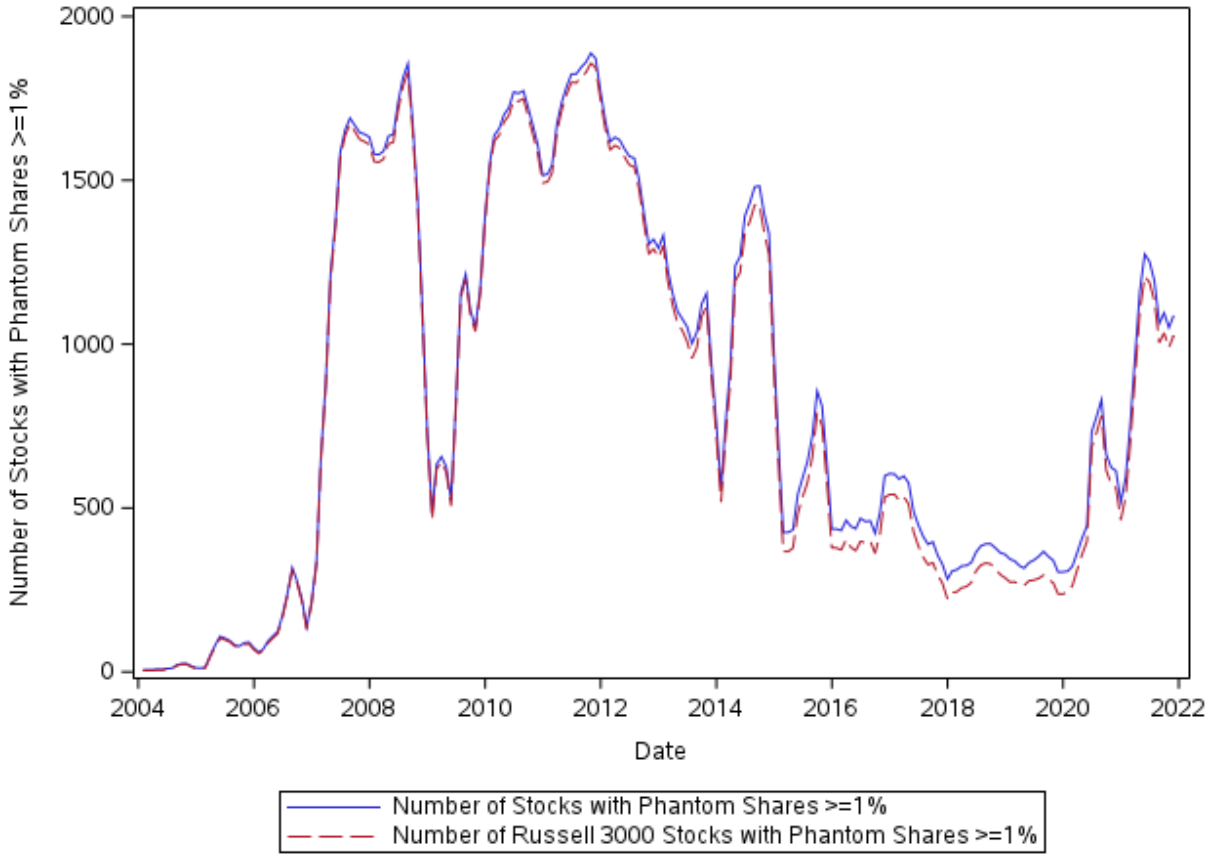

Table 1: Summary Statistics for ETFs, Underlying Shares, and ETF Ownership

In this table, we present the summary statistics for the ETFs, the underlying firm characteristics, and the ETF ownership in our sample, which is based on 6,556 US public firms from 1,150 ETFs over 2004-2018. Panel A presents summary statistics for the ETFs. Observations are taken at the date ETFs report holdings. Panel B reports summary statistics on the firms in our sample of company votes. Each observation here is an agenda item of a meeting. Panel C presents summary statistics for the institutional ownership, shares outstanding, and short interest of ETFs. All variables are defined in Appendix B.

Panel A: Summary Statistics for ETFs

Variables	Obs	Mean	StDev	p1	p25	p50	p75	p99
Total Net Assets ($M)	76,089	1,752	8,737	1.663	30.73	147.2	718.4	27,285
Return (%)	77,493	0.728	5.011	–13.32	–1.156	0.747	3.007	14.48
Expense Ratio (%)	69,012	0.515	0.335	0.05	0.1	0.29	0.47	0.96
Turnover Ratio (%)	67,546	50.96	113.3	3	4	12	27	152
Fund Age (years)	74,785	6.636	5.002	0.0833	2.5	5.833	9.75	21
Net Flows (%)	71,642	2.928	15.9	–37.46	–1.3	0	3.909	100.2

Panel B: Summary Statistics for Underlying Firms

Variables	Obs	Mean	StDev	p1	p25	p50	p75	p99
Six-Month Momentum (%)	44,859	10.48	38.85	–63.38	–7.971	7.184	23.68	133.1
Book-to-Market	43,452	0.627	0.637	0.033	0.292	0.503	0.791	2.789
Assets	44,948	11,139	81,078	13.92	300.7	1,044	3,733	161,385
Return on Assets (%)	44,901	–0.109	67.54	–26.75	–0.151	0.543	1.694	7.658
Firm Age (years)	44,952	22.41	16.34	3	10	18	30	66
Institutional Ownership (%)	42,654	60.16	26.41	1.95	42.40	64.83	79.25	109.8
Short Interest Supply	42,539	8.449	9.918	0.126	2.563	5.245	10.33	59.26

Panel C: Summary Statistics for ETF Ownership

Variables	Obs	Mean	StDev	p1	p25	p50	p75	p99
ETF Shares Outstanding (‘000)	76,094	23,340	70,655	50	950	3,600	14,250	333,316
ETF Shares Held Short	75,744	2.34e+06	1.56e+07	2	3,929	23,569	169,567	5.28e+07
Short Interest Ratio (SIR)	73,335	0.057	0.296	0.000	0.002	0.007	0.025	0.903
ETF SIR: Directional Shorting	69,635	0.0156	0.077	0	0.000188	0.00128	0.00562	0.28
ETF SIR: Operational Shorting	68,624	0.0427	0.261	0	0.000733	0.0038	0.0162	0.724
Operational SIR (% of ETF SIR)	68,183	0.635	0.348	0	0.383	0.747	0.943	1
Industry ETF SIR	27,353	0.106	0.461	3.41E-05	0.00338	0.0118	0.0586	1.646
Ex-Industry ETF SIR	45,982	0.027	0.105	1.67E-06	0.00183	0.00565	0.0168	0.385
ETF Fail-to-Deliver (FTD)	78,309	30,434	383,814	0	101	751	8,619	413,998
ETF Fail-to-Deliver Ratio	75,947	0.00512	0.0665	0	2.90E-05	0.000275	0.0017	0.0745

Table 2: Summary Statistics for Phantom Shares and Voting Measures

In this table, we present the summary statistics for the phantom shares and voting measures that we use in our main regressions. Phantom shares and proxy voting outcomes are based on a sample of voting records from 6,556 different US public companies by 1,150 ETFs over 2004-2018. Voting premium figures are based on a smaller subsample (1,773 firms) due to additional option-based data requirements. All variables are defined in Appendix B. All statistics below are reported as percent of shares outstanding, and in percentage figures. Votes For, Votes Against, Broker Non-Vote, ETF Underlying Shares, ETF Underlying Shares: Voted For, ETF Underlying Shares: Voted Against, IMF Underlying Shares, IMF Underlying Shares: Voted For, and IMF Underlying Shares: Voted Against are in stock-date-item observation units; Phantom Shares and Voting Premium are in stock-date observation units.

Variables	Obs	Mean	StDev	p1	p25	p50	p75	p99
Phantom Shares	329,254	0.584	0.619	4.38e-05	0.133	0.448	0.839	2.682
Phantom Shares (Pre 2011)	126,763	0.481	0.522	0.000353	0.123	0.331	0.656	2.028
Phantom Shares (Post 2011)	202,491	0.649	0.664	1.70E-05	0.163	0.535	0.901	3.083
Votes For	328,205	74.97	142.7	8.94	67.46	79.42	86.84	97.88
Votes Against	328,263	4.981	9.815	0.00	0.532	1.544	4.387	54.41
Broker Non-Vote	327,543	6.998	9.632	0.00	0.00	3.654	10.81	42.53
ETF Underlying Shares	329,254	3.489	3.217	0.006	1.035	2.660	5.027	13.95
ETF Underlying Shares: Voted For	288,643	2.782	2.707	0.00	0.574	2.175	4.089	11.69
ETF Underlying Shares: Voted Against	288,643	0.078	0.473	0.00	0.00	0.00	0.00	2.419
IMF Underlying Shares	323,315	5.273	3.705	0.034	2.130	5.001	7.730	15.28
IMF Underlying Shares: Voted For	264,684	1.786	2.329	0.00	0.075	0.804	2.604	10.15
IMF Underlying Shares: Voted Against	264,684	0.072	0.470	0.00	0.00	0.00	0.00	2.226
Voting Premium [–5,0]	10,755	0.138	1.063	–1.507	–0.054	0.037	0.165	3.276
Voting Premium [–5,5]	10,796	0.132	1.045	–1.440	–0.042	0.033	0.146	3.087

Table 3: Phantom Shares and Votes Cast

In this table, we examine the effect of Phantom Shares on the number of votes cast for each agenda item at meetings. The dependent variable is the number of shares voted for the agenda item in Column 1, the number of shares voted against in Column 2, and the number of broker non-votes in Columns 3, all as a percentage of potential votes taken from ISS. We exclude director elections, ratification of auditors, and any agenda item that has a pass requirement of 1%. All independent variables are defined in Appendix B. All models include firm fixed-effects. Standard errors clustered by firm and meeting are used to calculate *t*-statistics reported in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively.

Dependent Variable	**(1)** **For**	**(2)** **Against**	**(3)** **Broker Non-Vote**
Phantom Shares	–0.753*** (–4.245)	–0.317*** (–3.468)	0.505*** (4.087)
ETF Underlying Shares: Voted For	1.004*** (13.990)		
IMF Underlying Shares: Voted For	0.527*** (11.366)		
ETF Underlying Shares: Voted Against		2.833*** (20.525)	
IMF Underlying Shares: Voted Against		1.467*** (18.010)	
ETF Underlying Shares			–0.111*** (–3.061)
IMF Underlying Shares			0.014 (0.360)
Shareholder Sponsored	–0.380*** (–70.574)	0.305*** (50.895)	0.020*** (12.048)
ISS Against	–0.181*** (–65.232)	0.155*** (63.559)	0.003*** (2.754)
Assets (log)	0.006** (2.046)	0.004** (2.170)	–0.003 (–1.505)
Firm Age	–0.004*** (–8.778)	–0.003*** (–12.711)	0.003*** (7.335)
Institutional Ownership	0.087*** (7.657)	0.049*** (7.611)	–0.057*** (–7.554)
Six-Month Momentum	0.002 (0.489)	–0.006*** (–3.731)	–0.003 (–1.313)
Book-to-Market	–0.015*** (–3.178)	0.002* (1.787)	0.003* (1.958)
Return on Assets	0.045 (1.207)	–0.017 (–1.361)	0.061*** (2.764)
Short-Sale Supply	–0.150*** (–7.435)	–0.038*** (–3.509)	0.074*** (4.411)
Constant	0.702*** (34.334)	0.082*** (7.325)	0.069*** (4.490)
Observations	41,210	41,262	49,568
R-squared	0.821	0.846	0.552
Firm FE	Yes	Yes	Yes

Table 4: Broker Non-Votes Around SEC Rule Changes

In this table, we examine the effect of Phantom Shares on the number of votes cast in director elections, and governance-related items around changes in broker voting rules. In 2010 (2012) the SEC changed the definition of director elections (other governance items) from routine to non-routine items; meaning that after the rule change brokers were no longer able to vote their shares uninstructed. These 2012 items include de-staggering the board of directors, implementing majority voting, eliminating supermajority voting, use of writer consents, rights to call special meetings, opt outs of anti-takeover provisions. For this test, we include only the agenda items that are director elections in Column 1 from 2008 to 2011, and only those items affected by the 2012 rule change in Column 2. We split the Phantom Shares measure using the Post 2010 dummy. Phantom Shares: Pre 2010 (Post 2010) replicate the Phantom Shares variable in Table 3, but takes the value of zero for years after 2010 (before 2010). The same is done using 2012 as the cutoff in Column 2. All firm controls are the same as Table 3, and are defined in Appendix B. Firm fixed-effects are included in Column 1, industry fixed-effects are included in Column 2. Standard errors clustered by firm and meeting are used to calculate *t*-statistics reported in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively.

Dependent Variable	**(1)** **Broker Non-Vote**	**(2)** **Broker Non-Vote**
	Director Elections (2008-2011)	***2012 Rule Change Items***
Phantom Shares: Pre 2010	0.024	
	(0.089)	
Phantom Shares: Post 2010	0.394**	
	(2.108)	
Post 2010	0.078***	
	(22.470)	
Phantom Shares: Pre 2012		–0.337
		(–0.535)
Phantom Shares: Post 2012		1.487**
		(2.263)
Post 2012		0.036***
		(6.154)
ETF Underlying Shares	–0.004	–0.018
	(–0.045)	(–0.165)
IMF Underlying Shares	–0.083	–0.067
	(–1.054)	(–0.635)
Observations	52,567	1,661
R-squared	0.737	0.381
Firm FE	Yes	No
Industry FE	No	Yes
Constant and Controls	Yes	Yes

Table 5: Phantom Shares and Hedge Mechanism

In this table, we examine the relationship between phantom shares and broker non-votes for firms that are more likely to be posted as hedge. In all columns the dependent variable is broker non-votes as a percentage of potential votes. ETF-Stock Return Correlation is the main variable of interest and is defined in Appendix B. Columns 1 and 2 use a High ETF-Stock Return Correlation an indicator variable if the ETF-Stock Return Correlation is above the sample median, and Columns 3 and 4 sort firms into deciles based on the ETF-Stock Return Correlation. All control variables are the same as Table 3, and are defined in Appendix B. In this table, we exclude director elections, ratification of auditors, and any agenda item that has a pass requirement of 1%. All models include firm fixed-effects. Standard errors clustered by firm and meeting are used to calculate *t*-statistics reported in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively.

Dependent Variable	**(1)** **Broker Non-Vote**	**(2)** **Broker Non-Vote**	**(3)** **Broker Non-Vote**	**(4)** **Broker Non-Vote**
	Above Median		***Correlation Decile Rank***	
Phantom Shares	0.289**	0.231*	–0.077	–0.052
	(2.059)	(1.703)	(–0.397)	(–0.270)
ETF-Stock Return Correlation (vw)	–0.004**		–0.001***	
	(–2.555)		(–2.848)	
ETF-Stock Return Correlation (vw) × Phantom Shares	0.423***		0.104***	
	(2.983)		(3.734)	
ETF-Stock Return Correlation (ew)		–0.005***		–0.001***
		(–3.474)		(–3.264)
ETF-Stock Return Correlation (ew) × Phantom Shares		0.507***		0.104***
		(3.590)		(3.635)
Observations	46,728	46,728	46,728	46,728
R-squared	0.559	0.559	0.559	0.559
Firm FE	Yes	Yes	Yes	Yes
Constant and Controls	Yes	Yes	Yes	Yes

Table 6: Directional vs. Operational ETF Shorting

In this table we examine the relationship between phantom shares that arise from directional shorting and phantom shares that arise from operational shorting, and broker non-votes. In all columns the dependent variable is broker non-votes scaled by potential votes. All independent variables are defined in Appendix B. In this table we exclude director elections, ratification of auditors, and any agenda item that has a pass requirement of 1%. All models include firm fixed-effects. Standard errors clustered by firm and meeting are used to calculate *t*-statistics reported in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively.

Dependent Variable	**(1) Broker Non-Vote**	**(2) Broker Non-Vote**	**(3) Broker Non-Vote**	**(4) Broker Non-Vote**	**(5) Broker Non-Vote**	**(6) Broker Non-Vote**
Phantom Shares: Operational Shorting	0.856***		0.924***			
	(5.172)		(5.265)			
Phantom Shares: Directional Shorting		0.227	–0.291			
		(0.930)	(–1.273)			
Phantom Shares: Industry ETFs				0.312*		
				(1.883)		
Phantom Shares: Ex-Industry ETFs				0.694***		
				(3.892)		
Phantom Shares: Industry ETFs - Operational					0.842***	
					(3.210)	
Phantom Shares: Industry ETFs - Directional					–0.308	
					(–1.346)	
Phantom Shares: Ex-Industry ETFs - Operational					0.964***	
					(3.817)	
Phantom Shares: Ex-Industry ETFs - Directional					–0.208	
					(–0.296)	
Phantom Shares: FTDs						8.135***
						(2.911)
ETF Underlying Shares	–0.124***	–0.085**	–0.125***	–0.108***	–0.124***	–0.091**
	(–3.418)	(–2.345)	(–3.451)	(–2.964)	(–3.405)	(–2.516)
IMF Underlying Shares	0.005	0.036	0.005	0.004	0.003	0.040
	(0.132)	(0.938)	(0.134)	(0.101)	(0.064)	(1.029)
Observations	49,568	49,568	49,568	49,568	49,568	49,568
R-squared	0.552	0.551	0.552	0.552	0.552	0.552
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Constant and Controls	Yes	Yes	Yes	Yes	Yes	Yes

Table 7: Phantom Shares and Proposal Pass Rate

In this table, we examine the effect of phantom shares on the pass rate of important votes in a panel logit specification. The dependent variable in each column is a dummy variable that takes the value of one if the vote passed, and the coefficients are given as odds ratios. We standardize all independent variables so that each coefficient reported in the table represents the odds ratio for a one standard deviation increase. The sample in: Column 1 is shareholder proposals; Column 2 is contested (within the margins of 5% of passing threshold) shareholder governance proposals; Column 3 is items affected by the 2012 rule change on broker voting; and Column 4 is contested proposals, including management and shareholder governance proposals. Columns 1 to 3 exclude any item where the base is shares outstanding. All other controls are the same as in Table 3 and are defined in Appendix B. Standard errors clustered by meeting are used to calculate *z*-statistics reported in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively.

Dependent Variable	**(1)** **Pass** ***Shareholder Proposals***	**(2)** **Pass** ***Contested Shldr Gov Proposals***	**(3)** **Pass** ***2012 Rule Change Items***	**(4)** **Pass** ***Contested Proposals***
Phantom Shares: Voted For	0.636***	0.638*	1.018	
	(–4.019)	(–1.772)	(0.102)	
Phantom Shares: Voted Against	1.048*	0.985	0.981	
	(1.653)	(–0.246)	(–0.207)	
Phantom Shares: Voted For × Post 2012			0.682*	
			(–1.796)	
Phantom Shares: Voted Against × Post 2012			1.039	
			(0.283)	
Post 2012			1.235	
			(0.820)	
Phantom Shares				1.038
				(–0.572)
Shares Outstanding Base				1.619*
				(1.726)
Shares Outstanding Base × Phantom Shares				0.596**
				(–2.230)
ETF Underlying Shares: Voted For	6.881***	2.308***	1.385*	1.077
	(10.224)	(2.966)	(1.747)	(0.584)
ETF Underlying Shares: Voted Against	0.677***	0.964	0.777***	0.975
	(–10.716)	(–0.738)	(–4.375)	(–1.050)
IMF Underlying Shares: Voted For	1.0396	0.523*	0.830	1.184
	(0.222)	(–1.733)	(–1.060)	(0.918)
IMF Underlying Shares: Voted Against	0.997	0.927	1.002	0.951**
	(–0.073)	(–1.180)	(0.031)	(–2.043)
Observations	6,433	474	1,204	1,081
Constant and Controls	Yes	Yes	Yes	Yes
Vote Base	Exclude shares outstanding	Exclude shares outstanding	Exclude shares outstanding	Include shares outstanding

Table 8: Phantom Shares and Voting Premium

In this table, we examine the effect that phantom shares have on the voting premium around special meetings and annual meetings with critical votes. The dependent variable in each column is the vote premium using the measure created by Kalay, Karakaş, and Pant (2014). In Columns 1 and 2, we use the median value of the voting premium around a window of [–5,0] days around the cum-date, which is three trading days prior to the record date for shareholder meeting (to allow for settlement of stock trades). Meeting Contentiousness corresponds to the total number of critical items on the meeting agenda divided by the total number of items on the meeting agenda. In Columns 3 and 4 we use the median value of the voting premium around a [–5,5] window. Columns 2 and 4 exclude special meetings. We standardize all continuous independent variables so that each coefficient reported in the table can be interpreted based on one standard deviation increase in that underlying variable. Firm controls are the same as Table 3 excluding the shareholder sponsored and the ISS against dummies, and are defined at the Appendix B. All models include firm fixed-effects. Standard errors clustered by firm and meeting are used to calculate *t*-statistics reported in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively.

Dependent Variable	**(1)** **Voting Premium**	**(2)** **Voting Premium**	**(3)** **Voting Premium**	**(4)** **Voting Premium**
	[–5,0]		***[–5,5]***	
Phantom Shares	–0.0004*	–0.0005***	–0.0003	–0.0005**
	(–1.7563)	(–2.6639)	(–1.6424)	(–2.4638)
Special Meeting	0.0011		0.0011	
	(1.5928)		(1.6160)	
Special Meeting × Phantom Shares	0.0017*		0.0010*	
	(1.9366)		(1.6844)	
Meeting Contentiousness		0.0001		0.0000
		(0.1188)		(0.0319)
Meeting Contentiousness × Phantom Shares		0.0013***		0.0012**
		(2.5872)		(2.1641)
Observations	9,653	9,368	9,676	9,391
R-squared	0.324	0.331	0.325	0.336
Firm FE	Yes	Yes	Yes	Yes
Constant and Controls	Yes	Yes	Yes	Yes

Table 9: Predicting Contentious Meetings

In this table, we test the possibility that Phantom Shares may lead to an increase in the likelihood of special meetings or more critical items during an annual meeting. Phantom Shares measure is created using short interest in Columns 1 and 2. Special Meeting and Meeting Contentiousness are defined the same as in Table 8. Column 1 is a logit model where the depended variable is the special meeting dummy, and pseudo r-squared is reported. Column 2 is a panel regression where the dependent variable is the ratio of critical items to the total number of items on the meeting agenda. Each observation represents a single firm meeting. All independent variables are the same as Table 3 excluding the shareholder sponsored and the ISS against dummies, and defined in Appendix B. Column 2 includes firm fixed-effects. Standard errors clustered by firm and meeting are used to calculate *z*-statistics and *t*-statistics reported in parentheses in Column 1 and 2, respectively. *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively.

	(1)	**(2)**
Dependent Variable	**Special Meeting**	**Meeting Contentiousness**
Phantom Shares	5.616	–0.267
	(0.543)	(–0.660)
Observations	10,259	9,368
R-squared	0.017	0.432
Firm FE	No	Yes
Constant and Controls	Yes	Yes

Table 10: Phantom Shares and Acquirer Returns

In this table, we examine possible effects of phantom shares on the announcement returns for acquiring firms. In Panel A, we use a sample of mergers and acquisitions of public firms. In each column, the dependent variable is a 4-factor alpha (Fama-French 3 factor plus momentum) obtained from a daily regression from days *t–10* to *t+1* or *t–1* to *t+1*. In Panel B, *Above 20* is a dummy variable that takes the value of 1 of the firm issued more than 20% of their shares and funded the merger is fully funded by stock. Columns 1 and 4 use a full sample of stock only mergers, Columns 2 and 5 include stock only mergers that issued between 5-35% of shares. Columns 3 and 6 include stock only mergers that issued between 10-30% of shares. Columns 1 to 3 include only public targets, and Columns 4 to 6 include public and private targets. In Columns 1, 2, 4 and 5 observations are weighted by the absolute value of the distance between the percentage of shares issued in the deal and the 20% cut-off. Firm and deal level controls are defined in Appendix B. All columns in both panels include acquiring firm SIC3 industry fixed-effects and year fixed-effects. We standardize all continuous independent variables so that each coefficient reported in the table can be interpreted based on one standard deviation increase in that underlying variable. Robust standard errors clustered by firm are used to calculate *t*-statistics reported in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively. While a constant is included in the regression, the coefficient is omitted for brevity.

Panel A: Phantom Shares and Acquirer Returns

Dependent Variable: 4-Factor Alpha	**(1)** **[–10,+10]**	**(2)** **[–1,+1]**	**(3)** **[–10,+10]**	**(4)** **[–1,+1]**	**(5)** **[–10,+10]**	**(6)** **[–1,+1]**
Phantom Shares	0.007	–0.001	0.011	0.005	0.009	0.002
	(1.358)	(–0.175)	(0.892)	(0.560)	(1.534)	(0.608)
Stock Only	–0.004	–0.006			0.010	–0.004
	(–0.539)	(–1.166)			(1.079)	(–0.691)
Stock Only × Phantom Shares	–0.014**	0.000			–0.003	0.004
	(–2.049)	(0.090)			(–0.367)	(0.683)
E-Index			–0.002	0.000	–0.009**	–0.005*
			(–0.349)	(0.015)	(–2.168)	(–1.874)
E-Index × Phantom Shares			–0.014**	–0.008*	0.003	–0.002
			(–2.126)	(–1.754)	(0.699)	(–0.946)
Stock Only × E-Index					0.021**	0.013**
					(2.518)	(2.384)
Stock Only × E-Index × Phantom Shares					–0.024**	–0.012**
					(–2.536)	(–2.028)
ETF Underlying Shares	–0.002	–0.005	–0.015	–0.008	–0.009	–0.009**
	(–0.290)	(–1.449)	(–1.478)	(–1.115)	(–1.279)	(–2.288)
IMF Underlying Shares	–0.005	0.003	–0.020	–0.003	–0.002	0.003
	(–0.645)	(0.711)	(–1.227)	(–0.270)	(–0.175)	(0.507)
Deal Value (log)	–0.005	–0.007***	–0.003	–0.009	–0.008*	–0.009***
	(–1.089)	(–2.734)	(–0.249)	(–1.138)	(–1.736)	(–3.484)
Same Industry Dummy	0.002	0.002	0.005	0.003	–0.002	–0.001
	(0.500)	(1.070)	(0.529)	(0.414)	(–0.465)	(–0.666)
Return on Assets	0.011	0.002	–0.170**	–0.135**	0.003	0.002
	(1.106)	(0.347)	(–2.292)	(–2.039)	(0.189)	(0.292)
Book-to-Market	0.014	0.003	0.010	0.001	–0.013	–0.006
	(1.542)	(0.612)	(0.626)	(0.097)	(–1.292)	(–1.645)

Panel A: Phantom Shares and Acquirer Returns						
Dependent Variable: 4-Factor Alpha	**(1)** **[–10,+10]**	**(2)** **[–1,+1]**	**(3)** **[–10,+10]**	**(4)** **[–1,+1]**	**(5)** **[–10,+10]**	**(6)** **[–1,+1]**
(continued)						
Firm Age	–0.003	0.002	0.004	0.000	–0.003	0.003
	(–0.963)	(1.113)	(0.253)	(0.009)	(–0.804)	(1.303)
Institutional Ownership	0.004	0.001	–0.028**	–0.006	–0.000	–0.001
	(0.694)	(0.163)	(–2.142)	(–0.570)	(–0.063)	(–0.313)
Short-Interest Supply	–0.002	0.001	–0.003	–0.003	–0.004	0.001
	(–0.529)	(0.345)	(–0.409)	(–0.779)	(–0.969)	(0.455)
Constant	–0.008	–0.001	–0.002	–0.000	–0.009	0.003
	(–1.615)	(–0.349)	(–0.159)	(–0.019)	(–1.398)	(0.945)
Observations	1,503	1,504	137	137	1,060	1,060
R-squared	0.143	0.164	0.558	0.496	0.217	0.293
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes

Panel B: 20% Share Issuance						
Dependent Variable: 4-Factor Alpha	**(1)** **Full Weighted**	**(2)** **5%-35% Weighted**	**(3)** **10%-30%**	**(4)** **Full Weighted**	**(5)** **5%-35% Weighted**	**(6)** **10%-30%**
Phantom Shares	0.004	0.014	0.018	0.003	0.003	0.013
	(0.408)	(0.936)	(1.055)	(0.234)	(0.151)	(1.170)
Above20	0.025	–0.000	–0.003	0.037*	0.028	0.019
	(1.424)	(–0.023)	(–0.103)	(1.907)	(1.389)	(0.899)
Phantom Shares × Above20	–0.030***	–0.030**	–0.026	–0.033**	–0.052**	–0.036*
	(–2.687)	(–2.094)	(–1.185)	(–2.164)	(–2.309)	(–1.803)
Observations	120	55	37	178	79	54
R-squared	0.591	0.770	0.834	0.464	0.570	0.670
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Constant and Controls	Yes	Yes	Yes	Yes	Yes	Yes

Internet Appendix

Phantom of the Opera: ETF Shorting and Shareholder Voting

This is an addendum to our paper "Phantom of the Opera: ETF Shorting and Shareholder Voting". In Table IA.1 and Table IA.2 we re-estimate Table 3 and Table 4 of our paper, respectively, using alternative vote bases. Table IA.4 replicates our main results in Tables 3 and 4 using two alternate measures of Phantom Shares.

Table IA.1: Phantom Shares and Votes Cast: Alternative Vote Bases

In this table, we repeat the test from Table 3, but use alternate denominators in determining the percentage of votes for, votes against, and broker non-votes. For brevity, each reported coefficient is from a separate regression. In Row (1) the dependent variables are votes for, against, and broker non-votes as a percentage of the vote base taken from ISS. In Row (2) the dependent variables are votes for, against, and broker non-votes as a percentage of the total of votes for + votes against. In Row (3) the dependent variables are votes for, against, and broker non-votes as a percentage of the votes outstanding from ISS and exclude dual class firms. In Row (4) the dependent variables are votes for, against, and broker non-votes as a percentage of the shares outstanding from ISS and exclude dual class firms. All the regressions include controls that are the same in Table 3, and are defined in Appendix B. All the regressions include firm fixed effects. Standard errors clustered by firm and meeting are used to calculate *t*-statistics reported in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively.

	Dependent Variable	**(1)** **For**	**(2)** **Against**	**(3)** **Broker Non-Vote**
Baseline (from Table 3)	Phantom Shares: Votes Outstanding	–0.753*** (–4.245)	–0.317*** (–3.468)	0.505*** (4.087)
(1)	Phantom Shares: ISS Vote Base	–0.922*** (–5.832)	–0.394*** (–3.387)	1.021*** (4.866)
(2)	Phantom Shares: For + Against	–1.062*** (–7.308)	–0.389*** (–3.319)	1.043*** (5.071)
(3)	Phantom Shares: Votes Outstanding (ex dual-class)	–0.799*** (–4.325)	–0.356*** (–3.801)	0.569*** (4.662)
(4)	Phantom Shares: Shares Outstanding (ex dual-class)	–0.789*** (–4.466)	–0.379*** (–3.916)	0.590*** (4.565)

Table IA.2: Broker Non-Votes Surrounding SEC Rule Changes: Alternative Vote Bases

In this table, we repeat the examination from Table 4 and broker non-votes around an SEC ruling that made brokers ineligible to vote in director elections starting in 2010 and additional items in 2012. For this test, we use the same specifications, but alter the denominator of the dependent variables. In Panel A, we repeat the test around the 2010 rule change, and Panel B repeats the test around the 2012 rule change. In each column the dependent variable is Broker Non-Votes divided my different share denominators. In Columns 1, broker non-votes are scaled by the voting base taken from ISS. In Columns 2, broker non-votes are scaled by the total of votes for + votes against. In Columns 3, broker non-votes are scaled by by the votes outstanding from ISS and exclude dual class firms. In Columns 4, broker non-votes are scaled by the shares outstanding from CRSP and exclude dual class firms. Standard errors clustered by firm and meeting are used to calculate *t*-statistics reported in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively.

Panel A: Director Elections (2008-2011)					
Dependent Variable	**Broker Non-Votes**				
	Baseline (from Table 4)	**(1)**	**(2)**	**(3)**	**(4)**
Vote Base	**Votes Outstanding**	**ISS Vote Base**	**For + Against**	**Votes Outstanding (ex dual-class)**	**Shares Outstanding (ex dual-class)**
Phantom Shares: Pre 2010	0.024	0.233	0.231	–0.041	0.154
	(0.089)	(0.443)	(0.439)	(0.145)	(0.510)
Phantom Shares: Post 2010	0.394**	0.941***	0.934***	0.342*	0.379*
	(2.108)	(2.620)	(2.602)	(1.798)	(1.847)
Post 2010	0.078***	0.116***	0.116***	0.081***	0.086***
	(22.470)	(17.013)	(17.022)	(22.482)	(21.639)
Observations	52,567	52,674	52,674	49,973	49,984
R-squared	0.737	0.757	0.757	0.741	0.730
Firm FE	Yes	Yes	Yes	Yes	Yes
Constant and Controls	Yes	Yes	Yes	Yes	Yes

Table IA.2: Broker Non-Votes Surrounding SEC Rule Changes: Alternative Vote Bases (continued)

Panel B: 2012 Rule Change					
Dependent Variable		**Broker Non-Votes**			
	Baseline (from Table 4)	**(1)**	**(2)**	**(3)**	**(4)**
Vote Base	**Votes Outstanding**	**ISS Vote Base**	**For + Against**	**Votes Outstanding (ex dual-class)**	**Shares Outstanding (ex dual-class)**
Phantom Shares: Pre 2012	–0.337	–1.208	–0.760	–0.373	–0.252
	(–0.535)	(–1.429)	(–0.659)	(–0.593)	(–0.384)
Phantom Shares: Post 2012	1.487**	2.493	3.132**	1.478**	1.811**
	(2.263)	(1.383)	(2.207)	(2.114)	(2.426)
Post 2012	0.036***	0.029**	0.045***	0.035***	0.035***
	(6.154)	(2.234)	(4.165)	(5.781)	(5.572)
Observations	1,661	1,378	1,661	1,625	1,622
R-squared	0.381	0.407	0.395	0.381	0.374
Industry FE	Yes	Yes	Yes	Yes	Yes
Constant and Controls	Yes	Yes	Yes	Yes	Yes

Table IA.3: Phantom Shares and Votes Cast

In this table, we repeat the test from Table 3, but use alternate samples, as well as additional controls to account for possible outliers, in terms of firms with a large number of phantom shares. In the Row 1, we identify the 10^{th} (90^{th}) percentile level of phantom shares each year, and exclude any firm observation below (above) the 10^{th} (90^{th}) percentile. In Row 2, we create a Herfindahl index to measure the concentration of phantom shares at the firm level. We then include this as an additional control variable. Finally, in Row 3, we include a Top ETF fixed effect, where the *Top ETF* is the ETF that contributes the largest fraction of phantom shares for a given firm-meeting. Standard errors clustered by firm and meeting for Rows 1 and 2, and by Top ETF and meeting for Row 3, are used to calculate *t*-statistics reported in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively.

	Dependent Variable	**(1)** **For**	**(2)** **Against**	**(3)** **Broker Non-Vote**
Baseline (from Table 3)	Phantom Shares: Votes Outstanding	–0.753***	–0.317***	0.505***
		(–4.245)	(–3.468)	(4.087)
(1)	Excluding Top (Bottom) 10% of Sample	–0.605**	–0.747***	0.741***
		(–2.011)	(–4.434)	(3.632)
(2)	Including Phantom Shares HHI as Control	–0.820***	–0.304***	0.463***
		(–4.520)	(–3.235)	(3.660)
(3)	Including Top ETF Fixed Effect and Standard Error Cluster	–1.125***	–0.297***	0.516**
		(–5.268)	(–2.309)	(2.468)

Table IA.4: Alternate Phantom Share Measures

In this table, we repeat the test from Table 3 and 4, but use alternate measures of phantoms shares. In Panel A we use ETF Daily Turnover (Columns 1 to 3) and ETF Daily Short Volume (Columns 4 to 6) to create phantom shares and repeat the test from Table 3. We extract the daily total short volume information for each ETF, using data feeds from individual exchanges: NYSE, ARCA, NASDAQ, BATS, FINRA's TRF, and ORF. In Panel B, we use the same alternate measures of ETF Turnover (Columns 1 and 2) and ETF Daily Short Volume (Columns 3 and 4), and replicate the tests from Table 4. All models include firm fixed effects. In Panel A standard errors clustered by firm and meeting are used to calculate *t*-statistics reported in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively. In Panel B, firm fixed-effects are included in Column 1 and 3, industry fixed-effects are included in Column 2 and 4, and date fixed effects are included to absorb potential time trends during the sample period. Standard errors clustered by firm and meeting are used to calculate *t*-statistics reported in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively.

Panel A: Votes Cast

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent Variable	**For**	**Against**	**Broker Non-Vote**	**For**	**Against**	**Broker Non-Vote**
Phantom Shares Proxy: ETF Turnover	–1.842***	–0.974***	0.528*			
	(–4.186)	(–3.688)	(1.669)			
Phantom Shares Proxy: ETF Short Volume				–3.126***	–2.274***	3.057***
				(–4.664)	(–5.630)	(6.954)
Constant	0.705***	0.083***	0.071***	0.697***	0.078***	0.073***
	(34.309)	(7.460)	(4.583)	(34.201)	(7.049)	(4.775)
Observations	41,210	41,262	49,370	41,210	41,262	49,370
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.821	0.846	0.551	0.821	0.846	0.552
Controls	Yes	Yes	Yes	Yes	Yes	Yes

Table IA.4: Alternate Phantom Share Measures (continued)

Panel B: Regulatory Changes				
	(1)	**(2)**	**(3)**	**(4)**
Dependent Variable	**Broker Non-Vote**	**Broker Non-Vote**	**Broker Non-Vote**	**Broker Non-Vote**
	Phantom Shares Proxy: ETF Turnover		**Phantom Shares Proxy: ETF Short Volume**	
Phantom Shares Proxy: Pre 2010	0.148		-6.609	
	(0.328)		(-1.083)	
Phantom Shares Proxy: Post 2010	1.699***		2.566***	
	(2.754)		(2.701)	
Phantom Shares Proxy: Pre 2012		0.165		-2.983
		(0.145)		(-1.219)
Phantom Shares Proxy: Post 2012		2.663***		2.551**
		(4.838)		(2.571)
Observations	52,353	1,657	52,353	1,657
R-squared	0.749	0.381	0.749	0.382
Firm FE	Yes	No	Yes	No
Industry FE	No	Yes	No	Yes
Controls	Yes	Yes	Yes	Yes

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