

'Price-Driven Churn in Islamic Equity Screening'

Evidence from a Point-in-Time Compliance Panel

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Abstract

Islamic equity screening standards diverge in a detail that is customarily treated as a technicality, being the denominator of the leverage ratio. AAOIFI divides interest-bearing debt by spot market capitalisation, whilst Dow Jones Islamic Market and S&P Shariah divide by a twenty-four month and thirty-six month trailing average respectively, and MSCI divides by total assets. Because price enters the AAOIFI denominator directly, a fall in a firm's share price mechanically raises its measured leverage and can carry it from compliant to non-compliant with no change whatsoever in the underlying business. Khatkhatay and Nisar (2007) described this mechanism in prose, however its contribution to observed compliance turnover has not to my knowledge been isolated.

Garnering from SEC XBRL filings, I construct a point-in-time compliance panel for 426 US firms over 2010 to 2026, comprising 23,248 firm-quarters, and decompose every compliance transition into the portion attributable to the price move and the portion attributable to changes in reported debt. Under the AAOIFI screen, 56.9% of compliance flips are attributable to the price move alone, against 23.3% attributable to changes in debt. Substituting a twenty-four month averaged denominator, holding the screen otherwise constant, reduces the total quarterly flip rate from 5.25% to 3.22% and reduces the count of price-driven flips by 67%. Compliance churn concentrates sharply in market drawdowns, peaking in the first quarter of 2020 at roughly double the sample baseline.

I believe these results carry an uncomfortable implication for the industry, in that a material share of the turnover borne by Shariah-compliant mandates is an artefact of the screening methodology rather than a response to firm conduct, and further that the choice of denominator window is a first-order design decision rather than the technical footnote it is usually taken to be.

Keywords: Islamic finance, Shariah screening, AAOIFI, compliance churn, portfolio turnover, point-in-time data

1. Introduction

Islamic equity screening applies two filters to a firm, being a business-activity screen which excludes prohibited lines of business, and a set of financial-ratio screens which limit leverage, liquidity and impure income. The financial screens are precisely codified and publicly documented, which renders them an unusually clean setting in which to study the consequences of standard disagreement, as Qadi, Sharma and Medda (2025) duly observe.

The leverage screen is the binding constraint for most firms, and it is defined as a ratio of interest-bearing debt to a denominator. That denominator is not common across standards. AAOIFI Standard 21 uses spot market capitalisation with a 30% threshold, whilst Dow Jones Islamic Market and MSCI use approximately 33%, however DJIM computes market capitalisation as a twenty-four month trailing average and S&P Shariah as a thirty-six month average. MSCI's alternative construction uses total assets, thereby removing price from the denominator in its entirety.

This distinction carries a consequence which is easy enough to state and which, until now, has not been measured. Where market capitalisation sits in the denominator, the ratio is a function of price, and therefore a firm whose share price falls, with its balance sheet unchanged, will see its measured leverage rise. If the fall is large enough the firm breaches the threshold, whereupon Islamic mandates tracking that standard are obliged to divest. The divestment is triggered by the price decline itself, and not by any deterioration in the firm's conduct or in its capital structure.

Khatkhatay and Nisar (2007) set this out directly, observing that under a market-capitalisation denominator "a company which was considered Shariah-compliant one day, has to be considered shariah non-compliant the next day, if there is a downward price fluctuation... And all this with no change in the company's operations." Their supporting evidence was a single-date cross-sectional count on the BSE 500. The mechanism has since been widely acknowledged in qualitative terms, and indeed the averaging windows adopted by DJIM and S&P Shariah are plainly a response to it, however it has not to my knowledge been formally decomposed into its price-driven and fundamentals-driven components. I hold that this omission matters, in that an investor constrained by faith is entitled to know whether the constraint is measuring conduct or measuring price history.

1.1 Contribution

Proposing then three contributions, I take them in turn.

Firstly, this paper reports a labelled compliance transition matrix. Compliance churn is not unstudied, in that Badreldin (2022) measures annual constituent rebalancing shifting some 30% to 60% of portfolio market capitalisation, whilst Qadi, Sharma and Medda (2026) rank next-month screen-implied transitions by boundary proximity across seven emulated rulebooks. Neither reports the quarter-to-quarter persistence of compliance status as a matrix, and Qadi et al. are explicit that their proximity transform is not a structural transition probability, which is the gap addressed here.

Secondly, it decomposes each transition into price-driven and fundamentals-driven components by means of a counterfactual construction, thereby isolating the mechanism Khatkhatay and Nisar described and placing a number upon it. To my knowledge this decomposition has not previously been attempted.

Thirdly, it estimates the magnitude of the churn reduction which the trailing-average denominator delivers. The idea is not mine: Ashraf and Khawaja (2016) expressly propose trailing averages of the screening ratios as a means of lowering turnover. They propose it, however, without measuring it, and I have found no estimate of the reduction achieved, nor any comparison of DJIM's twenty-four month window against S&P's thirty-six month window and AAOIFI's spot market capitalisation. Qadi et al. (2025) tabulate the windows used by six standards and implement none of them, computing all screens instead upon spot market capitalisation.

1.2 Relation to the literature

The finding that Shariah screening reduces risk without materially changing returns is well established (Ashraf and Khawaja, 2016; Ashraf, 2016), whilst the finding that screening standards produce materially different constituent sets is likewise documented (Derigs and Marzban, 2008; Ho, 2015), though the overlap statistics are rarely reported.

A separate strand establishes that removal from an Islamic index produces negative abnormal returns. Mazouz, Mohamed and Saadouni (2019) document this across 8,250 stocks in 18 countries using DJIM World revisions, with emerging markets reacting more strongly than developed, whilst Mat Nor et al. (2019) find CAAR of -2.57% around the 2013 Malaysian Securities Commission reclassification. Chen and Ngo (2017) find that firms deleted specifically because debt rose suffer a more severe liquidity and institutional-ownership decline than firms deleted for other reasons, which is the closest existing work to the present question, though they do not separate price-driven from fundamentals-driven deletion. Ashraf, Rizwan and Raza (2025) find that firms which switch compliance status underperform and lose shareholder value relative to continuously compliant firms. The effect is not universal, however, and by the same token Wahyono (2023) finds a clean null for Indonesia's ISSI, which is a result I take seriously rather than set aside.

On costs, Hutchinson, Mulcahy and O'Brien (2018) provide the only rigorous quantification of purification drag, estimating 0.06% to 1.28% per annum on S&P 500 constituents depending upon method. Their design, being self-computed screens applied to a common universe rather than vendor constituent lists, is the approach adopted here.

The present paper sits closest to the work of Qadi, Sharma and Medda, who have addressed this territory twice. In their first paper (2025) they construct a continuous compliance index embedding six rulebooks upon CRSP/Compustat data, their contribution being measurement and portfolio design. In the second (2026) they extend to 13,188 securities across seven rulebooks, constructing boundary-

proximity measures with which they rank next-month screen-implied transitions, and exploiting the September 2023 DJIM and S&P methodology change together with 25 Malaysian list events. They find no robust matched repricing in the United States, whilst reporting abnormal returns of 1.76 percentage points over $[0,10]$ and 2.25 points over $[0,20]$ on 295 Malaysian inclusions.

Their apparatus is in several respects more sophisticated than mine, being built upon better data. I would distinguish the present contribution on three grounds. Firstly, they rank transitions by proximity to the boundary whilst declining, expressly, to treat that ranking as a structural transition probability, whereas I report the realised matrix directly. Secondly, they do not decompose transitions by cause. Thirdly, and most substantively, they tabulate the averaging windows in their methodology table and implement none of them, computing every screen upon spot market capitalisation, whereby the question of what the window is worth remains open in their framework as much as in anyone's.

Badreldin (2022) approaches churn from the cost side, measuring annual constituent rebalancing which shifts between 30% and 60% of portfolio market capitalisation, though at annual frequency and in aggregate rather than by cause. El Saleh and Jaafar (2021) apply eight screening methods to the ASX 200 and find that market-cap-denominated screens behave differently from asset-denominated ones, which is consistent with what follows here without isolating the mechanism.

2. Data and method

2.1 Source

Financial data are garnered from the SEC's XBRL companyfacts API, which returns every numeric fact reported in a filer's 10-K, 10-Q and 20-F submissions, each stamped with the accession number and with the date the filing was submitted. Three properties of this source matter vitally here.

The data are as originally reported. Where a period-end recurs across multiple filings, as it does whenever a subsequent filing carries comparative prior periods, I retain the earliest vintage, and restatements are therefore excluded by construction. This matters because a restatement would otherwise be indistinguishable from a genuine change in leverage, which would contaminate precisely the arm of the decomposition I most need to be clean.

The data are point-in-time. Every observation carries a filing date, and I match each quarter-end to the most recent observation whose filing date precedes it, whereby no accounting figure enters the panel before the date upon which it became public.

The data are complete for firms which later delist, in that EDGAR does not retroactively remove filings, and so a firm which filed in 2013 remains in the 2013 data regardless of what became of it

subsequently. This property is not exploited in the present draft, for reasons I set out in Section 5, however it is the basis for the extension described there.

Prices are daily adjusted closes. Shares outstanding are taken from the cover-page EntityCommonStockSharesOutstanding tag where available and from the balance-sheet parenthetical otherwise.

2.2 Construction of interest-bearing debt

No single XBRL tag captures interest-bearing debt across the universe, usage being fragmented across roughly forty concepts. I construct therefore a waterfall which takes the first available tag from an ordered list for the long-term component (LongTermDebtNoncurrent, then LongTermDebtAndCapitalLeaseObligations, then LongTermDebt) and similarly for the current component (LongTermDebtCurrent, ShortTermBorrowings, NotesPayableCurrent, DebtCurrent), and sums the two. Firms with no debt-like tag are treated as zero-debt. This curation of the tag space is the least glamorous part of the exercise and, I suspect, the part upon which the results most depend.

2.3 Sample

The universe is the S&P 500 constituent list. Of 503 tickers, all resolved to CIKs and 432 yielded usable debt and share-count series, whilst after merging with price data the panel comprises 23,248 firm-quarters across 426 firms, spanning 2010Q1 to 2026Q2. XBRL coverage does not extend before 2009, which excludes the 2008 crisis from the sample.

2.4 Screens

I implement the leverage screen of four standards, holding the numerator constant and varying only the denominator and the threshold.

Label	Denominator	Threshold
AAOIFI	Spot market capitalisation	30%
DJIM	24-month trailing average market capitalisation	33%
S&P Shariah	36-month trailing average market capitalisation	33%
MSCI	Total assets	33.33%

Table 1. Leverage screens as implemented. The business-activity screen and the impure-income screen are not implemented, for reasons given in Section 5.

2.5 Decomposition

For each firm i and quarter t whereby compliance status differs from that at $t-1$, I construct two counterfactuals. In the price counterfactual, debt is held at its $t-1$ value whilst the denominator is taken at t , and if this reproduces the observed status at t then the denominator movement alone was sufficient to cause the flip. In the fundamentals counterfactual, the denominator is held at its $t-1$ value whilst debt is taken at t , and if this reproduces the observed status then the change in debt alone was sufficient.

Transitions are in turn classified as price-driven where only the first counterfactual reproduces the flip, fundamentals-driven where only the second does, either-sufficient where both do, and interaction-only where neither does, the last case indicating that both movements were jointly necessary. This is a Blinder-Oaxaca style decomposition applied to a threshold indicator, and I would note that its falsification condition is straightforward, in that were the fundamentals arm to dominate, the thesis of this paper would simply be wrong.

3. Results

3.1 Transition dynamics under AAOIFI

Under the AAOIFI screen, 55.2% of firm-quarters are compliant. Of 22,822 quarter-to-quarter transitions, 1,199 are flips, being a quarterly rate of 5.25%.

	→ non-compliant	→ compliant
non-compliant at $t-1$	0.9369	0.0631
compliant at $t-1$	0.0438	0.9562

Table 2. Quarterly compliance transition matrix, AAOIFI screen, 426 firms, 2010 to 2026.

Compliance is persistent but it is not sticky. A compliant firm carries a 4.4% probability of losing compliance in any given quarter, which implies that a mandate tracking this screen faces continuous and non-trivial forced turnover, and this before we have asked what causes it.

3.2 What causes the flips

Cause	Count	Share
Price-driven	682	56.9%
Fundamentals-driven	279	23.3%
Either sufficient	123	10.3%

Interaction only	115	9.6%
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Table 3. Decomposition of 1,199 compliance flips under the AAOIFI screen.

Price movements cause roughly two and a half times as many compliance transitions as do changes in reported debt. Under a screen intended to measure a firm's relationship to interest-bearing finance, the majority of observed transitions therefore carry no information whatsoever about that relationship, and the investor who divests upon such a signal is acting upon the market's mood rather than upon the company's conduct.

3.3 The averaging window

Standard	Flip rate	Flips	Price-driven share	Price-driven flips
AAOIFI (spot, 30%)	5.25%	1,199	56.9%	682
DJIM (24m avg, 33%)	3.22%	736	30.8%	227
S&P (36m avg, 33%)	3.10%	707	28.3%	200
MSCI (total assets, 33.33%)	3.78%	861	26.9%*	232

Table 4. Churn and its composition under four screening standards. *Under MSCI the denominator contains no price term, and so this column measures transitions driven by movements in total assets rather than by price; the mechanisms are not comparable and the figure should be read accordingly.

Having substituted a twenty-four month averaged denominator, we observe the total flip rate fall by 39% and the count of price-driven flips fall by 67%. Extending to thirty-six months yields a further reduction, however a much smaller one, which suggests that the greater part of the available smoothing is achieved within two years.

Two observations follow. Firstly, the threshold differences between standards, being 30% against 33%, are minor relative to the denominator differences, and I would say the industry has spent its attention upon the wrong parameter. Secondly, since AAOIFI carries both the strictest threshold and the most price-sensitive denominator, the two effects compound rather than offset.

3.4 Timing

Flips are not uniformly distributed across the sample. The quarterly series peaks at 43 flips in 2020Q1 against a sample baseline near 20, with secondary peaks of 32 in 2018Q4 and 29 in 2011Q4, these corresponding respectively to the COVID-19 drawdown, the fourth-quarter 2018 selloff, and the 2011 euro-area crisis.

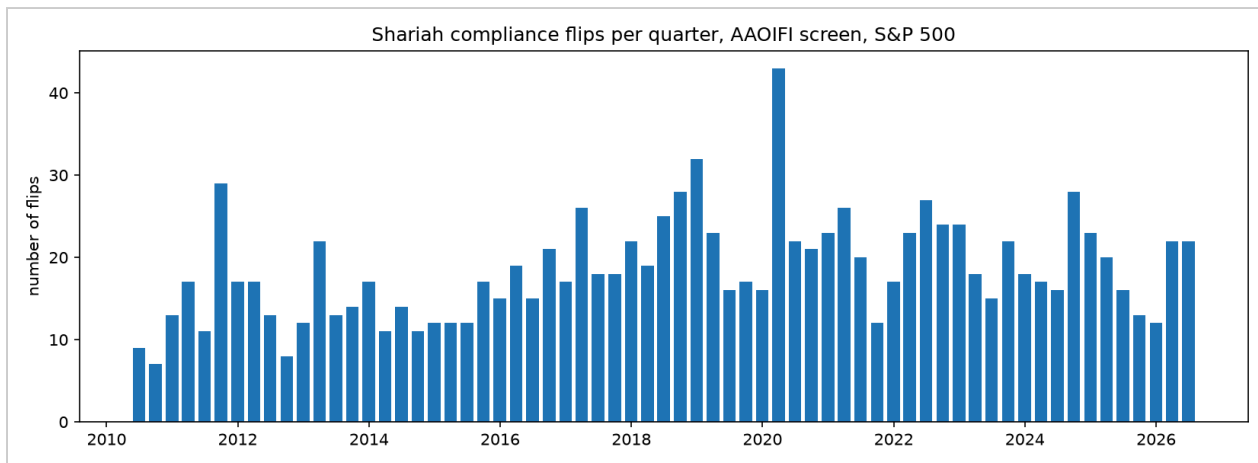


Figure 1. Shariah compliance flips per quarter, AAOIFI screen, S&P 500 constituents, 2010 to 2026.

This is the pattern which a price-driven mechanism predicts, and it is difficult to reconcile with a fundamentals-driven account, in that there is no reason for corporate leverage decisions to cluster in precisely those quarters. It implies further that the forced selling is procyclical, whereby mandates are obliged to divest into falling markets at the very point when liquidity is at its worst, which is to say that the constraint binds hardest exactly when it is most expensive to satisfy.

4. Interpretation

Three implications follow, and I state them tentatively given the limitations set out below.

Compliance status is in part a market-beta artefact. If the majority of transitions are driven by price then compliance is measuring something other than what it purports to measure, and any study which treats compliance status as a proxy for corporate conduct is partly measuring price history instead.

Shariah mandates carry an unrecognised procyclical exposure. Because divestment is triggered by price declines and concentrated in drawdowns, standard risk models applied to Islamic portfolios will not capture it, in that the exposure arises from the mandate rather than from the holdings, and a risk system which examines only what is held will not see what the mandate compels the holder to do.

The denominator is a policy lever, and here I hold a firmer view than the evidence alone compels. The 39% reduction in churn available from averaging costs nothing against the screen's stated purpose, in that a twenty-four month average measures a firm's leverage relative to its equity value just as a spot figure does, whilst carrying less measurement noise. Standards which use spot market capitalisation therefore impose turnover upon their followers which a different specification would avoid, and since that turnover falls upon investors who accepted a constraint in good faith, I believe the standard-setters owe them the more prudent specification.

5. Limitations

The universe is current S&P 500 constituents, and so the panel carries survivorship bias. Firms which delisted during the sample are absent, and they are disproportionately the leveraged firms most likely to breach a leverage screen, whereby the direction of the resulting bias runs against the finding rather than in its favour, the omitted firms being those most likely to have flipped. Correcting this requires reconstructing the CIK-to-ticker mapping from SEC submission files across all quarters, together with survivorship-free price history, and this is the immediate forthcoming step.

Only the leverage ratio is implemented, the business-activity screen being absent. The reported compliance rate of 55% is therefore far above the 28% to 30% which studies applying full screens report, and levels here are consequently not comparable to the literature, whilst the transition and decomposition results, which depend upon movement across the threshold rather than upon its position, are less affected.

The MSCI comparison is not like-for-like, as noted at Table 4, in that the decomposition's price arm measures asset movements under that standard.

XBRL begins in 2009, and so the 2008 crisis is excluded. Given that flips concentrate in drawdowns, this omits the single most informative episode available, which I regard as the most material gap in the design.

The sample covers US firms only. Whether the effect is larger in thinner markets, whereby price volatility is higher and Islamic mandates hold a greater share of the float, remains an open question, and it is the question most relevant to the Gulf.

6. Conclusion

Garnering from a point-in-time panel built upon SEC filings, I find that the majority of Shariah compliance transitions under the AAOIFI screen are attributable to share price movements rather than to changes in firm leverage, and that substituting a trailing-average denominator eliminates roughly two thirds of these whilst reducing total churn by 39%. Compliance churn concentrates in market drawdowns.

The mechanism is not new, having been described nineteen years ago, however it appears not to have been measured. Should these estimates survive the correction for survivorship bias, they suggest that a specification choice widely treated as technical imposes a measurable and largely avoidable cost upon Islamic mandates.

Three extensions follow naturally. The exercise should be repeated upon a survivorship-free universe, it should be extended to Gulf markets whereby the effect is plausibly larger, and the interaction between the leverage screen and the business-activity screen warrants examination in its own right, since the two filters may compound in ways which neither standard appears to anticipate.

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