Nixed in Nippon: Index Deletions, the TOPIX Reform, and the Upside of Getting Dumped in Japan*

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October 2026 (first version: September 2026)

Abstract

Japan's TOPIX reform turns index deletion from a surprise into pre-announced policy. In October 2022 the exchange designated 493 small constituents for a phase-down in ten quarterly steps ending in January 2025. A second stage begins with the review announced on 7 October 2026. This paper uses the reform, together with thirty years of Nikkei 225 deletions, to test the thesis of Arnott and Henslee (2024) that stocks discretionarily deleted from major indexes outperform for years after their removal. The Nikkei 225 evidence replicates the US anatomy. Among 87 tradable deletions since 1995, 65 have complete five-year windows. These 65 lose 26 percent against the market in the year before removal at the mean and 31 percent at the median. They leave at 0.78 times the universe median price-to-book, against 2.14 times for the stocks that replace them. A yen invested at the effective date grows to 1.97 times its TOPIX-relative value within five years, with a median of 1.73. One episode, the April 2000 overhaul, accounts for four fifths of the summed excess. Against a control matched on size and book-to-market with point-in-time fundamentals the premium is smaller: a mean excess ratio of 1.20, a median of 1.00 and a ratio of mean wealth of 1.19, about 3.5 percent per year. Most of the deletion premium in Japan is the premium of what deleted stocks have become. The TOPIX evidence is descriptive. The designated issues trailed size-matched non-designated peers by 8 to 12 points during the phase-down. About a quarter of that shortfall accrued inside the step windows, the rest between the steps. After final removal the cohort rebounded by 3 points in one month and has led by 5 to 8 points since. The control is twice the cohort's size, so the shortfall is measured, not identified. For the second stage the paper screened 605 likely transitional issues on the actual review window and registered five falsifiable predictions before the list was published. The list of 7 October 2026 names 683 transitional issues. The screen held 585 of them, and the misses sit just above its full-capitalization boundary, where the exchange ranks on free float. A first addendum records cohort, control and reference prices before any outcome is known.

AI disclosure. Generative AI tools, including OpenAI Codex, were used for computational verification and editorial support. The author is responsible for the research design, interpretation and final manuscript.

Keywords: Index deletions, index reconstitution, price pressure, TOPIX, Nikkei 225, passive investing, pre-registration

JEL classification: G11, G12, G14, G23

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* I thank Rob Arnott for sharing the Nixed paper and for his comments and ideas on Japan and beyond, Samu Elinger for many discussions of the Japanese data, and Jonatan Wimmer, data scientist, for the point-in-time reconstruction of index membership and the audit of the exit-event history on which this paper builds. All errors remain mine.

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1. Why Japan is the out-of-sample test that matters

Index deletions are the unloved side of reconstitution. Arnott and Henslee (2024) document, for the S&P 500, the Russell 1000 and the Nasdaq-100, that discretionary deletions more than halve relative to the market in the year before removal, trade at less than half the market multiple on their way out, and then beat the market, and the Russell 2000 Value benchmark appropriate to what they have become, for at least five years. Two mechanisms carry the result: long-horizon mean reversion in the deep value tail, and the forced, price-insensitive selling of index-tracking assets concentrated around the reconstitution date.

Japan offers a clean out-of-sample test of this thesis for three reasons. The institutions differ: selection for the Nikkei 225 is a committee judgment on a price-weighted index, and the assets tracking Japanese benchmarks include the Bank of Japan's ETF portfolio, which was for a decade the largest price-insensitive index position in the world. The sample is independent: no US-drawn conclusion about index-committee behavior needs to hold in Tokyo. And, unique to Japan, the TOPIX reform of 2022 to 2028 converts deletion from a surprise into a pre-announced, phased administrative program covering hundreds of issues. That is a natural experiment the US literature does not possess. Its second stage is announced on 7 October 2026, which allows predictions to be registered before outcomes are known. The registration answers the criticism Arnott and Henslee level at their own genre: a backtest can be data-mined, a dated prediction cannot.

The paper makes three contributions. It replicates the US deletion anatomy on Japanese data and finds it, in headline terms, stronger than in the United States, but shows that a large part of the headline is the value regime of the year 2000 and that against a control matched on size and book-to-market the premium is modest and right-skewed. It uses the first stage of the TOPIX reform, with the official JPX designation lists, to measure what pre-announced, phased deletion did to prices. The answer is not the one an earlier draft of this paper gave: the designated issues trailed their nearest observable non-designated peers by roughly ten points over the phase-down, and most of the shortfall accrued between the reduction steps rather than inside the windows that event studies examine. Whether the schedule caused the shortfall cannot be established from one reform observed against a control twice the cohort's size, and the paper does not claim it. The paper then screens the second-stage review on the actual review window and registers five predictions in a separate note whose hash and public timestamp are to precede the announcement of 7 October 2026.

A word on what changed since the draft of 26 August 2026. Every number in that draft was recomputed in a documented replication package. The Nikkei 225 results reproduce to the second decimal. The valuation gap of Exhibit 2 did not reproduce under any documented definition and is replaced by a point-in-time version. The first-stage TOPIX comparison reverses sign once the cohort is taken from the official JPX lists and the control is built as stated. The second-stage screen changes because the cumulative-capitalization criterion ranks the liquidity-qualified domestic issues of all segments on August average capitalization, not current constituents at a month-end. The credit-quality overlay that drew on companion work has been removed pending that work's own revision. Where earlier drafts described the first-stage shortfall as a lesson for index designers, this version describes it as a measured shortfall and leaves the design question to a second stage that is yet to run.

2. Related literature

The index-effect literature begins with additions. Shleifer (1986) and Harris and Gurel (1986) document abnormal returns of about three percent for stocks added to the S&P 500 and disagree on whether they reverse. Beneish and Whaley (1996) and Lynch and Mendenhall (1997) show that once Standard and Poor's began pre-announcing changes, the run-up moved to the window between announcement and

effective date and was only partly reversed afterwards. Kaul, Mehrotra and Morck (2000) exploit a redefinition of public float in the Toronto index that carried no information and still moved prices by more than two percent without reversal, the cleanest early evidence that demand curves for individual stocks slope down. Wurgler and Zhuravskaya (2002) tie the size of the inclusion effect to the availability of substitutes and hence to arbitrage risk. Deletions received less attention because there were fewer of them and they were confounded by distress. Chen, Noronha and Singal (2004) find a permanent price increase for additions but no permanent decline for deletions and attribute the asymmetry to investor awareness. Petajisto (2011) measures the index premium and its cost to index funds at 21 to 28 basis points per year for the S&P 500 and considerably more for the Russell 2000.

Two recent strands bear directly on this paper. One documents the disappearance of the index effect. Greenwood and Sammon (2025) show that the S&P 500 addition return fell from 7.4 percent in the 1990s to 0.3 percent in the last decade and that the deletion effect vanished with it, despite a rising passive share. Chinco and Sammon (2024) estimate that share at about a third of the US market once rebalancing volume around reconstitutions is counted, twice the share held by index funds alone. Pavlova and Sikorskaya (2023) show that benchmarked active managers trade in the same direction as passive funds at index cut-offs, and Coles, Heath and Ringgenberg (2022) that index investing reduces information production without measurably degrading price informativeness. The other turns the deletion side into an investment proposition. Arnott, Kalesnik and Wu (2018) and Arnott, Brightman, Kalesnik and Wu (2023) document that cap-weighted index funds systematically buy additions at high multiples and sell deletions at low ones, and that delaying reconstitution trades or holding the deletions recovers part of the cost. Arnott and Henslee (2024) extend the holding period to five years and find that discretionary deletions beat the market by more than five percent per year compounded, and beat the Russell 2000 Value index that best describes what they have become. Broby (2026) confirms the addition-deletion asymmetry on 2023 to 2025 data with matched controls. Hendrix, Liu and Roberts (2024) quantify the cost of trading only on reconstitution days from the index fund's side, and van der Beck, Bouchaud and Villamaina (2025) show how funds with illiquid holdings inflate their own returns through price impact and subsequently underperform. Together these papers establish the mechanism that this paper takes to Japan: price-insensitive flow at the reconstitution date, valuation extremes at entry and exit, and long-horizon reversion.

The Japanese evidence is thinner and mostly about additions. Hanaeda and Serita (2003) study precisely the April 2000 overhaul that dominates the present sample and report five-day returns of about plus 19 percent for the thirty additions and minus 36 percent for the thirty deletions, with the remaining constituents down 14 percent, the largest reconstitution shock on record. Okada, Isagawa and Fujiwara (2006) find that Nikkei 225 additions rise between announcement and effective date and fall thereafter, consistent with temporary demand from index arbitrageurs. Chattopadhyay, Shaffer and Wang (2020) use the JPX-Nikkei 400 to show that inclusion is valued enough to change corporate behavior. The TOPIX reform itself has produced a small literature that is mainly Japanese. Aketa (2022) describes the first weight-reduction day of 28 October 2022, with volume at fifteen times normal, mostly off-exchange, and a temporary decline of 1.6 percent recovered within two weeks. Morishita (2023, 2024) finds the designated issues broadly in line with TOPIX Small after November 2022, apart from that first drop. Harada (2023) tracks the 493 designated issues visually and notes selling pressure the day before each implementation and a strong outperformance of the 43 issues re-included in 2023. Harada and Nguyen (2025) run the formal event study over the ten quarterly reductions, with windows centered on the trading day before each implementation, and find consistently negative abnormal returns concentrated in the smallest and least liquid issues. Kurita and Irie (2023) document reversals around earlier free-float revisions of TOPIX and argue for restraint in index changes. Section 5 places these

findings next to the present ones: the step-window losses are partly shared by non-designated small caps, and the larger part of the shortfall specific to designation accrues between the steps.

The Bank of Japan matters for the flow channel. Charoenwong, Morck and Wiwattanakantang (2021) show that the Bank's ETF purchases, about 3.5 percent of GDP by 2018, raised valuations and share issuance without raising investment, and Harada and Okimoto (2021) identify the afternoon price impact of purchase days on Nikkei 225 constituents. The purchases were shifted to TOPIX-linked ETFs from 2018, discontinued in March 2024 (Bank of Japan 2024), and the holdings are now being sold at about 330 billion yen per year at book value, roughly 0.05 percent of trading value (Bank of Japan 2025). Harada (2022) argues that the Bank's TOPIX-linked holdings amplify the pressure on issues whose weights are reduced. For the Nikkei 225 deletions in this sample the Bank is largely irrelevant after 2018. For the TOPIX transitional issues it is one passive holder among many that sells in proportion as weights fall, at a pace that is small relative to turnover.

3. Data and design

Membership events for the Nikkei 225 and TOPIX are reconstructed from the LSEG joiner and leaver records under a strict per-security alternation rule, because the vendor's action labels are swapped in pairs at the row level. The reconstruction returns exactly 225 Nikkei 225 members at every year-end from 1995 to 2025 with two documented exceptions: Mizuho Holdings is absent from the feed between its listing in September 2000 and its replacement by Mizuho Financial Group in March 2003, and NX Holdings leaves and re-enters the feed across the year-end 2021 during its holding-company transition. Daily adjusted prices cover every security that ever belonged to either index, 399 for the Nikkei 225 and 2,998 for TOPIX, including delisted ones, so the analysis is free of survivorship bias at the level of the price panel. The LSEG panel ends on 29 May 2026 and is extended to 4 September 2026 with exchange daily bars from J-Quants, chained through daily returns with the exchange's adjustment factors. On the May 2026 overlap the two sources agree on all 36,587 price points to rounding.

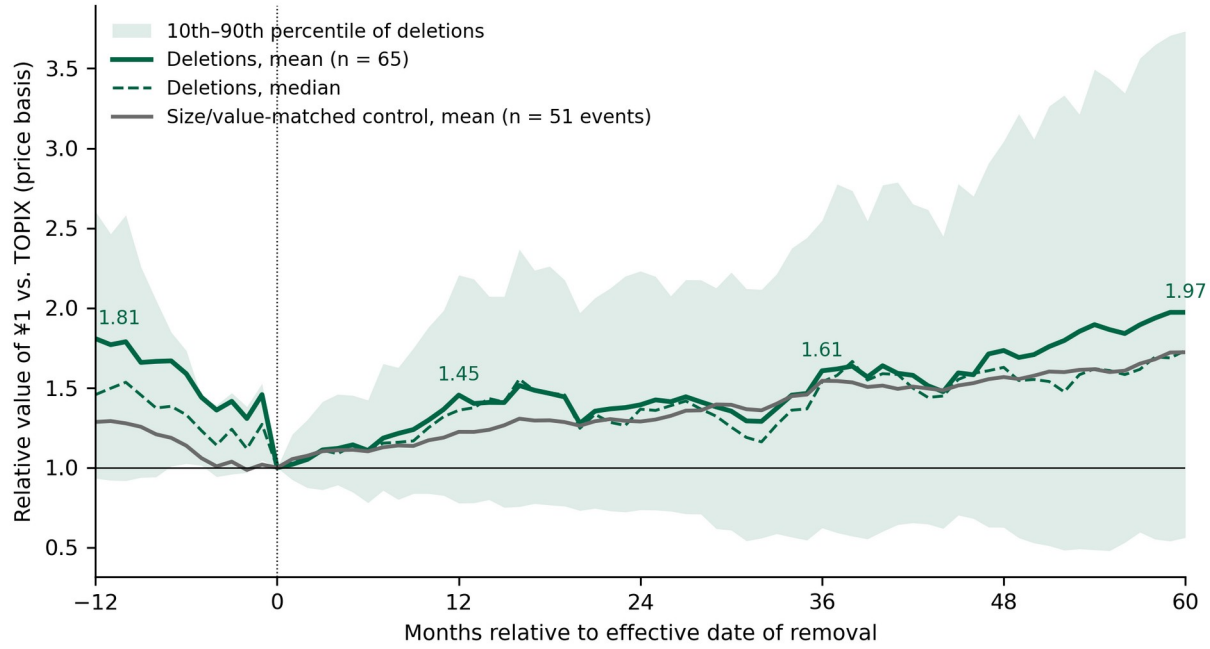
Each Nikkei 225 leave event between 1995 and 2025 is classified against a curated exit-event history. An issue that continues trading at least ninety days beyond its removal is a tradable deletion, the object of interest. Exits through completed mergers, tender offers or squeeze-outs, and default-like exits with a final-year return below minus 80 percent, are separated, as are removals reversed by re-entry within ninety days. Of 170 leave events, 87 are tradable deletions with a median post-removal trading life of 121 months, 42 are M&A exits, one is default-like, two are technical and 38 are unresolved. The classification conditions on ninety days of trading after removal, information that is not available at the effective date. The event class therefore describes what happened to the deletions that continued as listed companies and is not a rule an investor could have applied on the day, which is the same convention Arnott and Henslee use. Returns are price returns measured symmetrically against the TOPIX price index at calendar-month anniversaries of the effective date. Delisted positions are frozen at the last traded price in yen. Freezing the relative value instead changes the five-year mean by one hundredth. Announcement dates are not in the data. All timing is at the effective date, which makes the post-removal estimates conservative relative to designs that capture the run-up of the replacement leg. Dividends are not added back on either side. The trailing yield of the deletions at removal exceeds the universe median by about two tenths of a point, and the difference to the matched control described below is between a tenth and two thirds of a point depending on how issues without a recorded dividend are treated. No total-return correction is applied and none is claimed.

Two features are new relative to the first draft. Inference uses a percentile bootstrap over effective dates rather than over events, because thirty of the 65 complete-window events share the date 24 April 2000 and are not independent draws, and it reports the share of draws at or below one rather than a p-value,

since the draws resample dates within one market and one history. And each deletion is compared not only with the index but with a control portfolio of what it has become: the equal-weighted set of TOPIX members at the effective date that are not Nikkei 225 members, whose fiscal-year-end market capitalization lies within one half to two times the deleted security's and whose price-to-book falls in the same tercile of the universe. Fundamentals are point-in-time: an issue is valued on the last fiscal-year statement whose period end precedes its original announcement date and whose announcement date precedes the event. Where the announcement date is missing, or lies before its own period end, which the vendor file records in 1,511 cases, the statement is taken to be available six months after the period end. The control has a median of 131 names and is available for 51 of the 65 events on 22 effective dates. This follows the benchmark logic of Arnott and Henslee, who measure US deletions against the Russell 2000 Value index for the same reason.

4. The deletion premium in Japan, 1995 to 2025

Exhibit 1. Nikkei 225 tradable deletions: relative value of ¥1 versus TOPIX, months −12 to +60 (65 deletions with complete five-year windows, 1995 to 2020), and the size- and value-matched control



Mean and median across events, band = 10th to 90th percentile of event-level relative values. Price basis on both sides, interim delistings frozen at last price. The control is the equal-weighted portfolio of non-Nikkei TOPIX members within one half to two times the deleted security's fiscal-year-end capitalization and in the same point-in-time price-to-book tercile, available for 51 events. Source: LSEG, J-Quants, author's calculations.

The shape replicates the US anatomy. In the year before removal the deletions lose 26 percent against TOPIX at the mean and 31 percent at the median, each event's return measured forward from the twelfth month before the effective date. The mean relative value at month minus twelve in Exhibit 1 is 1.81, and its inverse, minus 45 percent, is not an average return, since the inverse of a mean is not the mean of the inverses. From the effective date the deletions recover immediately and persistently: the mean reaches 1.45 within twelve months and 1.97 at sixty months, the median 1.73, and 74 percent of deletions are ahead of TOPIX after five years. Three aggregations of the five-year outcome give three different numbers and none is privileged. The mean of per-event annualized excess returns is 8.6 percent per year, the median 11.6 percent, and the annualized mean level is 14.6 percent. The mean of annualized rates sits below the median because a handful of events with relative values near zero pull it down, while a few large winners pull up the mean of levels. A cluster bootstrap over the 26 effective dates places the

mean at sixty months between 1.05 and 2.40 at 95 percent confidence, with 1.5 percent of draws at or below one, while the interval for the median includes one. The US figure of Arnott and Henslee is about five percent per year.

Exhibit 2 confirms the valuation mechanism with point-in-time fundamentals. Additions arrive at 2.14 times the universe median price-to-book of the last statement announced before the event and tradable deletions depart at 0.78 times, a spread of 2.7 times that is the Japanese sibling of the four-fold spread in the United States. Valuing each issue on the last period end instead, without regard to when the statement was published, gives 2.26 and 0.76 on a slightly larger sample. M&A exits, by contrast, leave at 1.33 times the median and show no pre-removal collapse, with a mean relative value of 1.15 twelve months before the exit. The discipline of separating deletion types matters, and the exit classification does it mechanically.

Exhibit 2. Where they come in, where they go out

Group	P/B ÷ universe median	n
Additions	2.14	111
Tradable deletions	0.78	72
M&A exits	1.33	27

Median price-to-book of the last fiscal-year statement whose original announcement date precedes the event (statement taken as available six months after the period end when the announcement date is missing), divided by the median of the same ratio across all TOPIX members at the event date under the same rule. Additions = Nikkei 225 spell starts 1995 to 2025 net of technical re-entries. Using the last period end without regard to publication gives 2.26, 0.76 and 1.32 on 114, 78 and 27 events. Source: LSEG, author's calculations.

4.1 One episode carries most of the excess

Thirty of the 65 complete-window deletions stem from a single event, the overhaul of 24 April 2000, which ejected thirty old-economy names to make room for technology stocks at the peak of the dot-com bubble. Hanaeda and Serita (2003) measured the shock: minus 36 percent for the deletions in five days. Excluding that wave, the five-year mean relative value falls from 1.97 to 1.34, the median from 1.73 to 1.09, and the share of positive events from 74 to 54 percent, almost exactly the US magnitude. The bootstrap interval for the mean then runs from 0.96 to 1.73, with 4.4 percent of draws at or below one. The April 2000 wave alone reaches 2.71 at sixty months with 97 percent of events positive, and it contributes 81 percent of the summed five-year excess over one across the 65 events. The attribution depends on the decomposition, so the paper reports the sample with and without the date rather than a single share.

The first draft of this paper read the decomposition as the central result: the deletion premium is regime-dependent, ordinary in ordinary reconstitutions and spectacular when an index buys glamour and dumps substance at a valuation extreme. That reading survives against the index. It does not survive against the control.

4.2 Against what they have become

The matched control portfolios are themselves fallen small value stocks, selected on the same size and point-in-time price-to-book as the deletion at its effective date, and they too recover strongly against TOPIX: the mean control reaches 1.72 at sixty months. Against this benchmark the deletions' excess is a mean ratio of 1.20 with a median of 1.00, and 49 percent of deletions end ahead of their control. The cluster bootstrap places the mean excess between 1.05 and 1.47 with 0.6 percent of draws at or below one. The ratio of mean wealth, the mean five-year value of the deletions divided by the mean five-year value of their controls, is 1.19, or 3.5 percent per year, with an interval from 1.07 to 1.53. These aggregations answer different questions. The ratio of mean wealth is the outcome of an equal-weighted

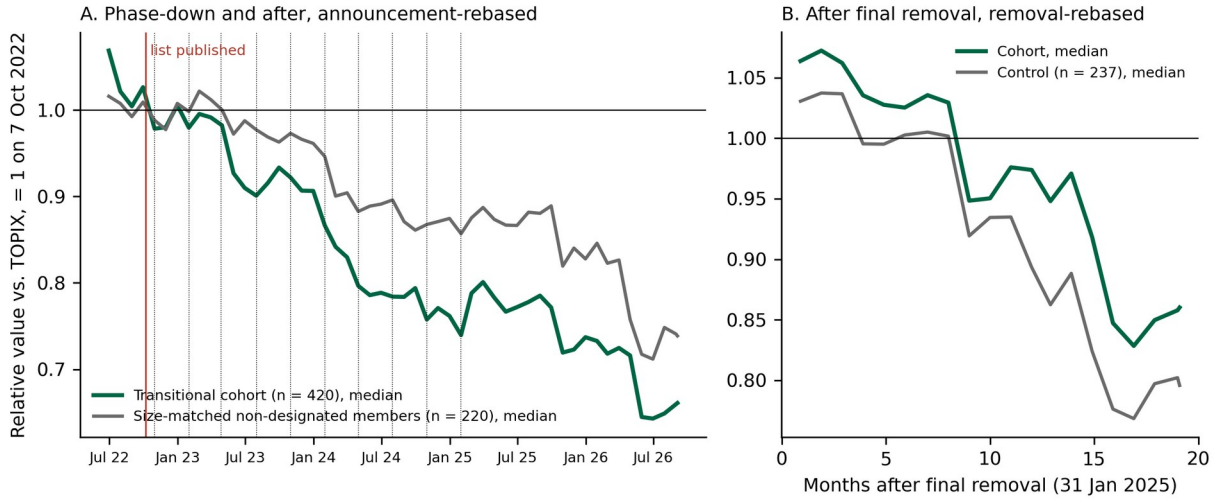
portfolio that holds every deletion against an equal-weighted portfolio of every control, and it is the estimator the registration note adopts. The mean of the per-event ratios annualizes to 3.8 percent. The mean of per-event annualized excess returns is 1.4 percent and the median minus 0.1 percent, because a few large winners dominate the levels and not the rates. Excluding April 2000 the mean excess is 1.28, the median 1.02 and the ratio of mean wealth 1.32, with an interval for the mean from 1.02 to 1.55. The April 2000 wave is no longer special once its control, which rallied with the value regime, is netted out. Matching on the last period end without regard to publication, the specification of the September draft, gives a mean of 1.22 and a median of 1.05 on 57 events, so the result does not depend on the timing rule.

The reading that follows is more modest and, I think, more useful than the regime story. Most of the Japanese deletion premium is the premium of deep small-cap value in the years after the deletion, which any investor could have earned without the deletion signal. What remains specific to deletion is a portfolio excess of roughly three to four percent per year that is carried by a minority of large winners, with a median close to zero. That is consistent with a liquidity-and-neglect channel operating on a few names rather than with a systematic mispricing of the whole discard pile, and it is consistent with the US evidence once the Russell 2000 Value benchmark is applied. The pre-removal path makes the same point from the other side: in the year before removal the deletions lost 21 percent against TOPIX and their controls 18 percent, so both were on the same road down and the deletion added a few points of pressure at the end. A full separation of a small-value premium from a deletion premium would need a design that holds size, value and the deletion signal fixed at once, which 51 events on 22 dates do not support. The residual reported here is a matched comparison, not a decomposition, and a matched observational comparison is what it remains.

5. The TOPIX reform: deletion as pre-announced policy

The first stage of the TOPIX revision, announced on 7 October 2022, placed the 493 constituents with a tradable-share market capitalization below ten billion yen into a transitional regime with weights reduced in ten quarterly steps from the end of October 2022. Three of the 493 have no price record in the panel. At the re-evaluation of October 2023, 43 issues met the continuation criterion and left the transitional regime. Of the remaining, 27 delisted before the end of the program and 420 were removed at the end of January 2025. These cohorts are taken from the JPX lists rather than from vendor leave events, which agree on 415 of the 420 names. The cohort is deep value and micro-cap by construction, with a median capitalization of 7.6 billion yen at designation. Designation was nearly a deterministic function of size, so no non-designated constituent has the size of the median designated issue. The control used here, all non-designated members within the 5th to 95th percentile band of the designated issues' capitalization at end-September 2022, has a median of 17.2 billion yen, 2.3 times the cohort's. It is the nearest feasible neighbour, not a twin.

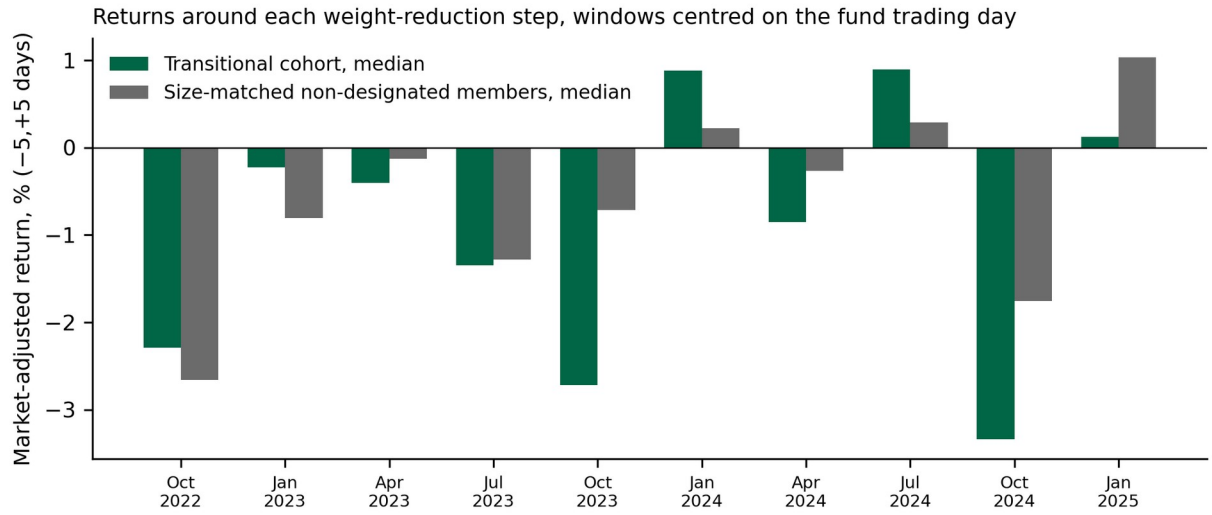
Exhibit 3. TOPIX first stage: transitional cohort versus size-matched non-designated members. Panel A rebased at the publication of the list (7 October 2022), Panel B rebased at final removal (31 January 2025)



Medians of issue-level relative values versus TOPIX, price basis. Cohort = 420 issues designated in October 2022, not re-included in October 2023 and listed at final removal. Control in Panel A = non-designated constituents within the 5th to 95th percentile band of the 490 observable designated issues' capitalization at end-September 2022 (2.9 to 21.3 billion yen, n = 220), in Panel B re-formed at end-January 2025 (2.4 to 26.7 billion, n = 237). Dotted lines mark the ten weight-reduction steps. Source: JPX, LSEG, J-Quants, author's calculations.

Over the twenty-seven-month phase-down the cohort returned a median 0.740 relative to TOPIX. The size-matched control returned 0.857. The cohort therefore trailed its nearest peers by 11.7 points at the median and 10.5 at the mean, with a bootstrap 90 percent interval for the median difference from minus 16.4 to minus 6.4 points, resampling issues. Two qualifications attach to that number. The 420 final-removal names are selected after the fact: they are the designated issues that neither regained full weight in October 2023 nor delisted before the end. Across all 490 observable designated issues, the cohort an investor could have formed on 7 October 2022, the median shortfall against the same control is 8.4 points, with an interval from minus 13.6 to minus 4.1. And the bootstrap resamples names within one reform and one market regime, so it measures sampling variation across issues and not across policy experiments. Forming the size band from the 420 names instead of the 490 gives 121 controls and a median shortfall of 8.7 points with a wider interval from minus 19.7 to minus 2.0. The shortfall is not a size gradient in the data at hand: within the non-designated group the relative value is flat across capitalization buckets from 14 to 35 billion yen, within the cohort it is flat from 4 to 12 billion, and in the overlap region where cohort issues above 10 billion meet non-designated issues below 15 billion the gap is still 7 points at essentially equal size. But the overlap is thin, the control is more than twice the cohort's size at the median, and free float, liquidity, sector and prior trend are not matched. The paper describes the shortfall of the designated issues against their nearest observable peers. It does not identify the effect of the schedule.

Exhibit 4. Market-adjusted returns of the transitional cohort and of the size-matched control in the (−5, +5)-day windows around each of the ten weight-reduction steps, centered on the fund trading day



Medians of issue-level returns relative to TOPIX. Each window holds the eleven daily returns of days −5 to +5, from the close of day −6 to the close of day +5, and is centered on the trading day before each implementation date, on which index funds rebalance (Harada and Nguyen 2025). Cohort at each step = designated issues still listed and not yet re-included. Control = non-designated constituents in the 5th to 95th percentile band (n = 220). Source: JPX, LSEG, J-Quants, author's calculations.

Where the shortfall sits is the next question. Harada and Nguyen (2025) report consistently negative abnormal returns in short windows around the steps. Exhibit 4 reproduces that pattern with eleven-day windows centered on the fund trading day: the cohort lost 2.3, 2.7 and 3.3 percent at the median around the October steps of 2022, 2023 and 2024 and roughly nothing at the other steps, while the size-matched control lost 2.7, 0.7 and 1.8 percent in the same windows. Benchmarked against non-designated peers rather than against the index, the ten windows sum to a cohort shortfall of 3.2 points at the median and 1.5 at the mean, 4.1 and 2.5 when the windows are centered on the implementation date itself, and placebo windows at the quarter-ends before designation show differences within 0.9 points. Window medians cannot be subtracted from a phase-down median, so the split is put on an additive footing with the same window days. The log relative value of two fixed buy-and-hold portfolios, the 420 cohort names against the 220 controls, falls by 11.9 log points over the phase-down. Of that, 3.1 points, about a quarter, accrue inside the ten windows and 8.7 points outside them, and implementation-day centering moves the inside share to 29 percent. The larger part of the relative shortfall, not all of it, accrued between the steps, concentrated in 2023. That pattern is consistent with holders spreading the selling of a known list rather than trading at the close of the step day, and it is also consistent with other differences between the cohort and its larger peers that this design cannot separate. The October losses are partly a small-cap seasonal that non-designated peers share and that a market-model event study attributes to the steps. Aketa's (2022) observation that the first reduction day moved volume fifteen-fold but prices only briefly is consistent with this: the flow was visible, the price effect was diffuse.

After final removal the picture turns. In the calendar month after the last step the cohort beat its re-formed size-matched control by 3.3 points at the median and 4.1 at the mean, with 72 percent of issues above the control mean and a bootstrap interval from 2.4 to 4.1 points. The liquidity rebound in miniature, and the one number in the section that the first draft had right. Since then the cohort has stayed ahead: 8.1 points at twelve months, 5.3 at eighteen and 6.4 on 4 September 2026, at 0.860 against 0.796 for the control, both relative to TOPIX from the removal date. The five-year verdict remains open, but the sign after removal is the sign the US evidence predicts.

The corporate-control channel is absent so far. Thirty-three of the 420 issues delisted between removal and 4 September 2026, an intensity of 5.1 percent per issue-year at risk. The size-matched control delisted at 4.9 percent and all retained constituents at 3.1 percent, and the simple annualized shares, 4.9, 4.8 and 3.0 percent, tell the same story. Delisting is more common among micro-caps than in the index at large, but not materially more common among the removed micro-caps than among their retained peers. The first draft described an accelerating wave of takeovers. The data describe the base rate of the size class.

Two limitations apply. Free-float capitalization, the variable on which designation was decided, is not in the data, so the size match uses full capitalization and the overlap region is small. And returns are price returns. The cohort's trailing dividend yield was 2.5 percent at designation against 3.0 percent for the control, and 3.1 against 3.0 at removal. Two yield readings do not bound the difference between total-return paths, so no correction and no direction of bias is claimed. A total-return version would need total-return paths for every issue and is not attempted here.

6. October 2026: predictions registered before the fact

The second stage begins with the first periodic review. Its base date is 31 August 2026, the list is announced on the fifth business day of October, which is 7 October 2026, and the first weight reduction takes effect on 30 October 2026, when the transition factor of the affected issues falls to 0.875. The factor falls by 0.125 at the end of each quarter, to 0.5 at the end of July 2027, and reaches zero at the end of July 2028, eight steps in all. At a re-evaluation on the base date of 31 August 2027, issues that meet the continuation criteria stop at the fourth-stage factor of 0.5 and keep it, while the others continue to zero. The second periodic review follows in October 2028 (Japan Exchange Group 2026b). The rules retain constituents that meet an annual traded-value turnover ratio of at least 0.14 and fall within the top 97 percent of the cumulative free-float capitalization of all liquidity-qualified domestic issues, and admit non-constituents at 0.2 and 96 percent. Capitalization is the average of daily values in August, and turnover is annualized for issues listed within the twelve-month window. In its trial calculation on the end-of-March 2026 basis JPX expects about 1,050 constituents after the review, down from about 1,650 (Japan Exchange Group 2026a).

The guidebook defines the cumulative share within the group of issues that meet the liquidity criterion, and the criterion depends on status. The screen therefore qualifies constituents at 0.14 and non-constituents at 0.2 and ranks the qualified group once. Applying these rules to the actual window, September 2025 to August 2026, with full in place of free-float capitalization and the constituent list of 30 June 2026, identifies 605 of 1,629 screenable constituents as likely transitional issues, 37 percent of the names carrying 1.8 percent of constituent capitalization. The boundary lies near 78 billion yen of full capitalization and the candidate median is 38 billion against 281 billion for retained issues. The binding criterion is size: three issues fail the liquidity criterion and a further 602 fail the cumulative-capitalization test among the liquidity-qualified. Sixty-nine issues listed within the window enter through the annualization rule, with the listing date approximated by the first exchange observation. The screen also identifies 95 addition candidates and, under this static screen, 1,119 constituents after the phase-down, before any re-evaluation or subsequent constituent changes. Relative to the JPX trial, which expects about 1,050 constituents, the screen retains roughly 70 more names, but neither the net direction of the free-float approximation nor the contribution of each approximation to the gap is established. Reading the rule as two separate rankings, all issues above 0.14 for the continuation test and all above 0.2 for the inclusion test, gives 588 removal and 93 addition candidates. All 588 removal candidates are among the 605 in the main specification. Neither reading has been confirmed by the exchange and both are recorded. The list is stable across vintages: the screen on the window ending in July 2026 gives 619 names and overlaps the August window at 599, and month-end rather than August-

average capitalization gives 598. The August note's 786 candidates ranked constituents only, and the first September draft's 546 ranked all issues but on month-end capitalization and without the liquidity qualification. Both are superseded. Unlike the first stage, the second-stage cohort is not deep value relative to the rest of the index: 49 percent of candidates and 45 percent of retained constituents trade below book.

The registration note (Grünbichler 2026a) commits, before the list is published, to five predictions against a size-matched control of retained constituents. Phase-down price pressure: the cohort trails the control between 7 October 2026 and 31 July 2028 by 3 to 20 points at the median, point estimate 8, with the larger part of the log shortfall accruing outside the step windows. Removal pop: 1 to 6 points over the control in August 2028. Long-horizon reversion: a ratio of mean wealth of the cohort to the control between 1.10 and 1.30 at five years, calibrated on the Nikkei 225 estimate of 1.19. Corporate-event channel: a delisting intensity per issue-year at risk of at least 1.5 times the control over 36 months after removal, the prediction the first-stage evidence supports least. Cross-section: the bottom price-to-book tercile of the cohort contributes more than half of the cohort's summed excess over the control, evaluated only if that sum is positive. The first three are primary, one-sided tests at the 5 percent level with a Holm correction across the family and a percentile bootstrap over issues, with the two delisting conventions of the third test combined conservatively through the larger of their two bootstrap shares. Because the third test matures in 2033, the first two are read in 2028 at the strictest Holm level and the family is evaluated once in 2033. With the first stage's dispersion the design detects a median shortfall of about 10 points at 80 percent power, about 12 points after the first Holm step, and does not detect one of 3 points, and the bootstrap over issues does not account for shocks common to the cohort. The registration note is available at https://doi.org/10.5281/zenodo.22939294. The public publication timestamp of that record establishes its registration before 7 October 2026. Evaluation follows the schedule of the reform: the re-evaluation of October 2027, the final step of July 2028 for the phase-down and the removal month, and 24, 36 and 60 months after removal in July 2030, July 2031 and July 2033. The registered document, not this paper, is the reference for evaluation.

The list was published on 7 October 2026. JPX named 683 transitional issues (572 Prime, 110 Standard, 1 Growth) and 35 additions, with 1,669 constituents from 30 October 2026 and 986 after the transition, before the re-evaluation of October 2027. The main specification of the screen held 585 of the 683. Ninety-eight issues named by JPX were not on the screen and 20 screened issues were not named, a Jaccard index of 0.832 with a recall of 85.7 percent and a precision of 96.7 percent. The misses have one anatomy. Ninety-two of the 98 are constituents with full capitalization between 78 and 175 billion yen, just inside the screen's boundary of 78 billion, and the exchange's appendix puts the 97 percent boundary at about 42 billion yen of free-float capitalization. Replacing free float by full capitalization therefore made the screen too narrow at the boundary, which settles the direction left open above. The control follows the registered rule. Of the 951 retained constituents only 57 fall within the 5th to 95th percentile band of the cohort's capitalization, so the fallback applies and the control is the 150 smallest retained issues, with a median capitalization of 104 billion yen against 43.5 billion for the cohort, a ratio of 2.4 that matches the first stage. With 683 cohort and 150 control issues the minimum detectable median shortfall rises from about 10 to about 12 points, and to about 14 at the first Holm step, so a shortfall of the size the first stage showed for its removed issues, 11.7 points, sits at the edge of detection. The first addendum to the registration note (Grünbichler 2026b) records the list, the overlap, the control as formed and the reference closes of 7 October 2026, with TOPIX at 4,154.11, and the replication package of the same date adds the computation as step 11. No prediction is altered.

7. What it means

For investors, Japan confirms the core proposition of Arnott and Henslee out of sample, with the caveat their own benchmark choice implies. Buy what the index discards, be patient, and measure against what the discards have become. Measured that way the premium is roughly three to four percent per year for an equal-weighted portfolio and close to zero for the median deletion, carried by a minority of large winners. It survives the matched comparison, it is not large, and most of what a deletions portfolio earns in Japan is the return of deep small-cap value.

For index designers, the first stage of the TOPIX reform is the first large-scale observation of pre-announced, phased deletion. There was no single-day fire sale of the kind Hanaeda and Serita measured in April 2000. There was a shortfall: the designated issues trailed their nearest observable peers by 8 to 12 points over two years, mostly between the steps, before recovering part of it after the last step. Whether the schedule caused that shortfall, and whether a shorter window between list and removal or an unpublished list would have done better, are questions this design cannot answer, because it observes one reform, one schedule and one regime against a control that is twice the cohort's size. What it can say is that the designated issues did not escape a shortfall during the phase-down, and where in time that shortfall accrued. The second stage, with eight rather than ten steps and 683 rather than 490 issues, will show whether the pattern repeats in a cohort that is larger and not deep value.

For research practice, October 2026 offers what backtests cannot: a dated, falsifiable bet with the outcomes unknown to everyone. The registration note was publicly archived on Zenodo on 24 September 2026, before the announcement of 7 October 2026. Its predictions are calibrated on the first stage and on the Nikkei 225 sample, and at least one of them is expected to fail. The point of registering is to find out. The cohort has been fixed since 7 October 2026, and the first readings are due in 2028.

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Data Appendix

Sources. LSEG raw workbooks (daily prices for all 399 historical Nikkei 225 and 2,998 historical TOPIX constituents, 1989 to May 2026, joiner and leaver event records, annual fundamentals through fiscal year 2025 with original announcement dates) and the setup_Data bundle of 1 August 2026 (classified exit events, monthly company capitalisations, dividend histories). J-Quants daily bars for all listed domestic common stocks, August 2021 to 4 September 2026 (prices, volumes, traded values, market capitalization, adjustment factors). JPX lists of transitional issues of 7 October 2022 and 6 October 2023, the JPX overview of the revisions of May 2026 and the TOPIX index guidebook effective October 2026.

Event samples. 170 Nikkei 225 leave events 1995 to 2025, of which 87 tradable deletions (65 with complete five-year windows on 26 effective dates, 51 with a matched control on 22 dates) and 168 spell starts (111 with point-in-time fundamentals). 493 issues designated in the first stage, 490 with prices, 420 removed at end-January 2025. 605 screened second-stage candidates (window September 2025 to August 2026, joint ranking of the liquidity-qualified group) and 95 addition candidates, 588 and 93 under separate rankings. Actual list of 7 October 2026: 683 transitional issues, 35 additions and 1,669 constituents from 30 October 2026, with a control of 150 retained issues under the registered fallback rule (Addendum 1).

Conventions. Price returns, benchmark-symmetric, calendar-month anniversaries, last close on or before each date. Equal weighting. Interim delistings frozen at the last traded price. Fundamentals point-in-time: period end before original announcement date before event, fallback six months after period end where the announcement date is missing or implausible. Step windows: eleven daily returns from the close of day −6 to the close of day +5. Delisting intensities per issue-year at risk. Bootstrap over effective dates for the Nikkei 225 samples (5,000 draws, seed 20260924), over issues for the TOPIX cohorts (10,000 draws), reported as percentile intervals and as the share of draws at or below the null value.