

# Japan Quantitative Strategy

*Post-ROE-P/B curve steepening strategy*

**NOMURA**  
Nomura Securities Co., Ltd.



**Akihiro Murakami**

Chief Quantitative Strategist, Japan  
Nomura Securities Co., Ltd.

+81 (0)3 6703 1746

[akihiro.murakami@nomura.com](mailto:akihiro.murakami@nomura.com)

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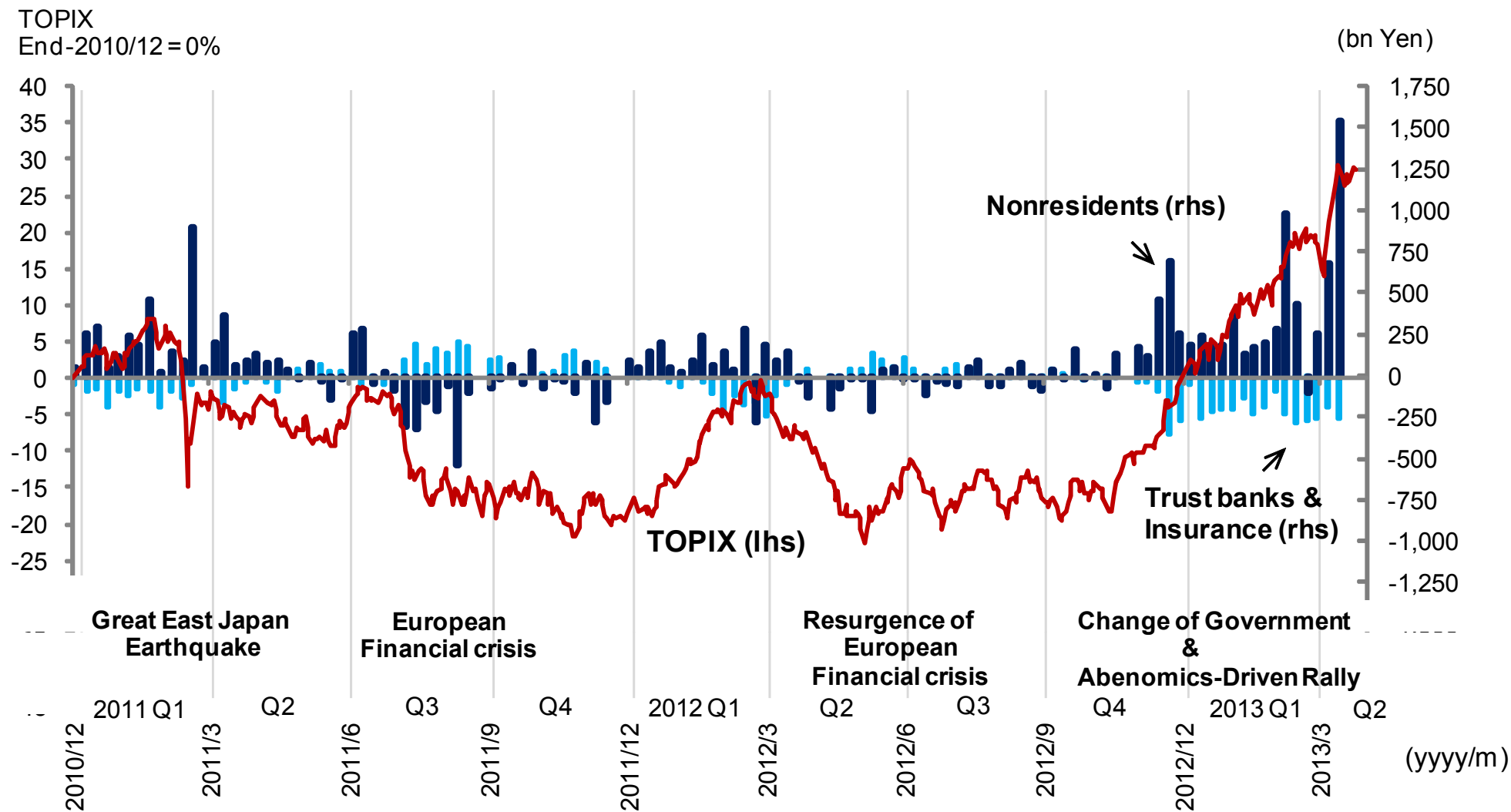
See Appendix A-1 for analyst certification, important disclosures and the status of non-US analysts.

Any authors named on this report are research analysts unless otherwise indicated.

- Current investment environment in the Japanese equity market :
  - Japanese equity quant fund performance and representative factors
  - Who are buying Japanese stocks?
  
- Our investment strategy :
  - (a) Major buyers of Japanese equities are nonresident investors
    - Strategy utilizing non-resident investors' stock selection skills
  
  - (b) Reliability of analyst forecasts improving
    - Earnings revisions focusing on the ROE-P/B curve
  
  - (c) The BOJ continues to be a major buyer of ETFs
    - Contrarian to the passive fund trading

# Who are buying Japanese stocks?

## Trading by trust banks, insurance and nonresident investors

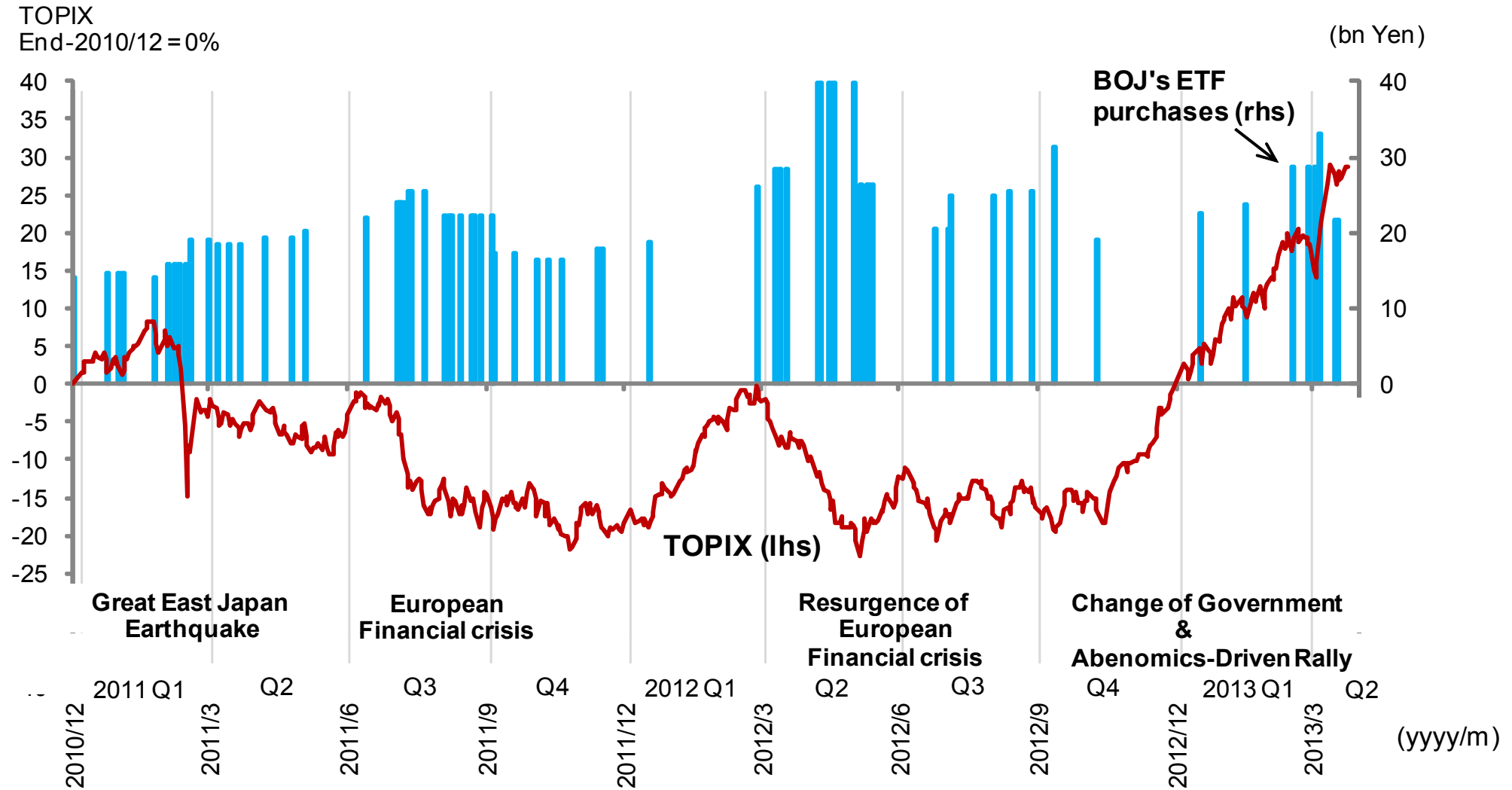


Note: Shows trust banks', insurance cos' and nonresident investors' (bottom graph) trading value, taken from equity purchases by investor category data (right axis) and TOPIX return(left axis). Sample period is January 2011 through 10.May.2013 .

Source: Nomura, from TSE's equity trading value by investor category data

# As part of monetary easing, the BOJ also keeps buying Japanese ETFs

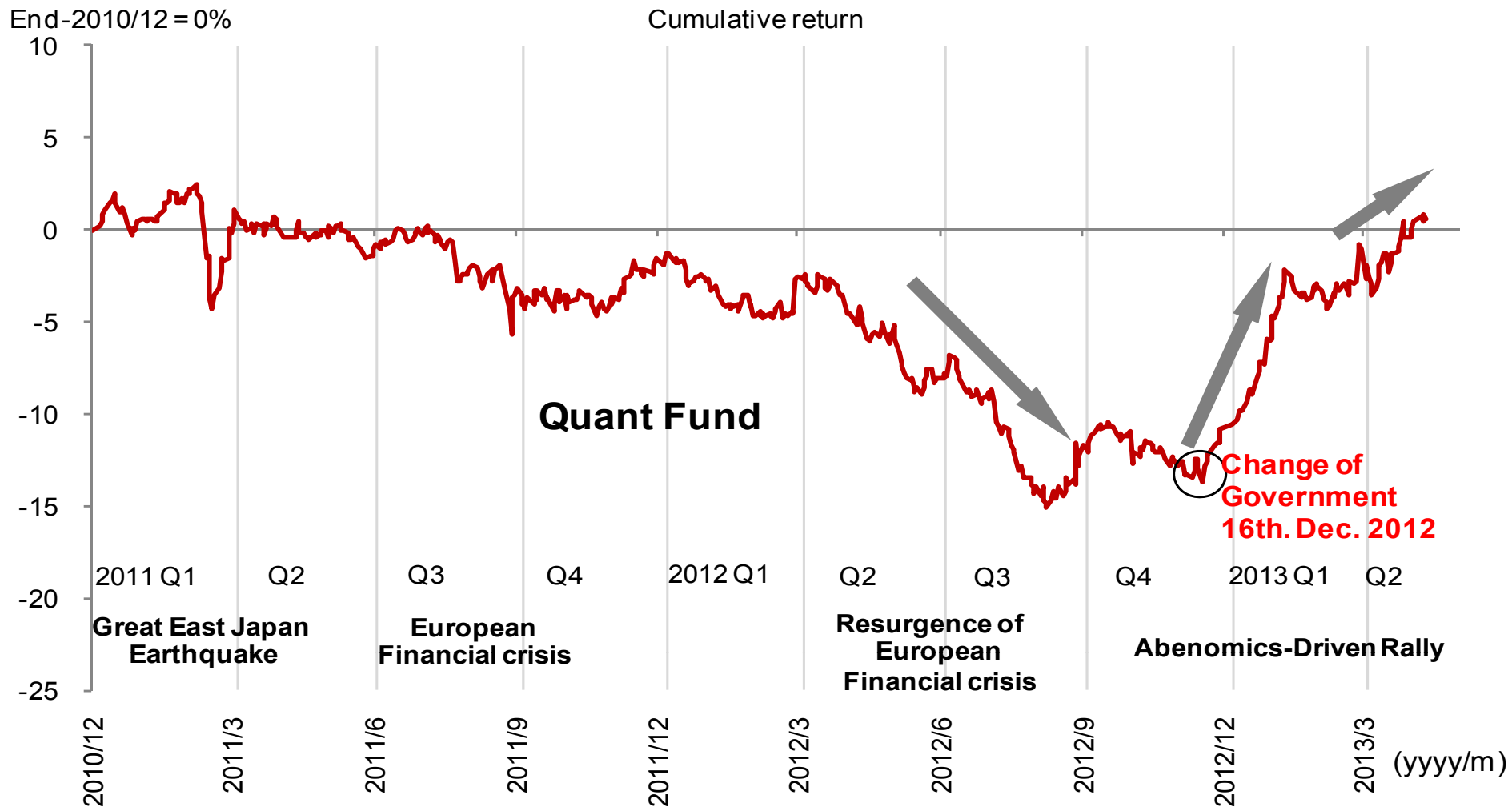
## BOJ's ETF purchases and the TOPIX



Note: Shows the actual amount of ETFs purchased by BOJ (right axis) and TOPIX return(left axis). Sample period is January 2011 through 10.May.2013 .  
Source: Nomura, based on BOJ and other data

# Japanese equity quant funds started to recover since the change of government

## Average performance of Japanese equity quant funds

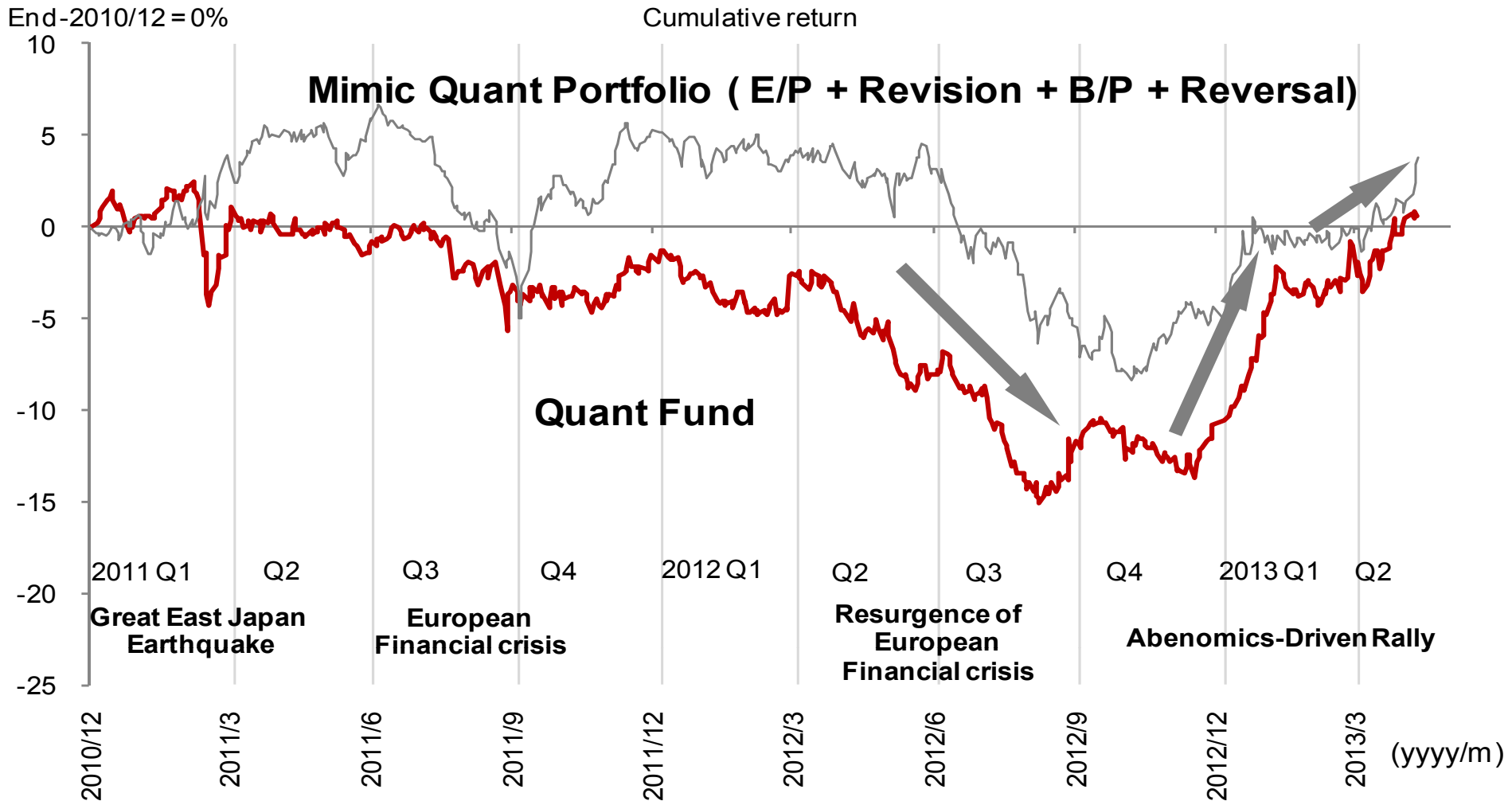


Note: Shows daily average return (Jensen's alpha), on an indexed basis, on 23 funds (domestic publicly offered investment trusts and nonresident investor funds) that invest in Japanese equities using a quant-based approach. Sample includes long-only, individual stock long-short, and market-neutral (long on individual stocks, short on index futures, for example) funds. Sample period is January 2011 through 10.May.2013 .

Source: Nomura

# Mimic portfolio's performance of quant funds

## Average performance of Mimic portfolio and Quant funds



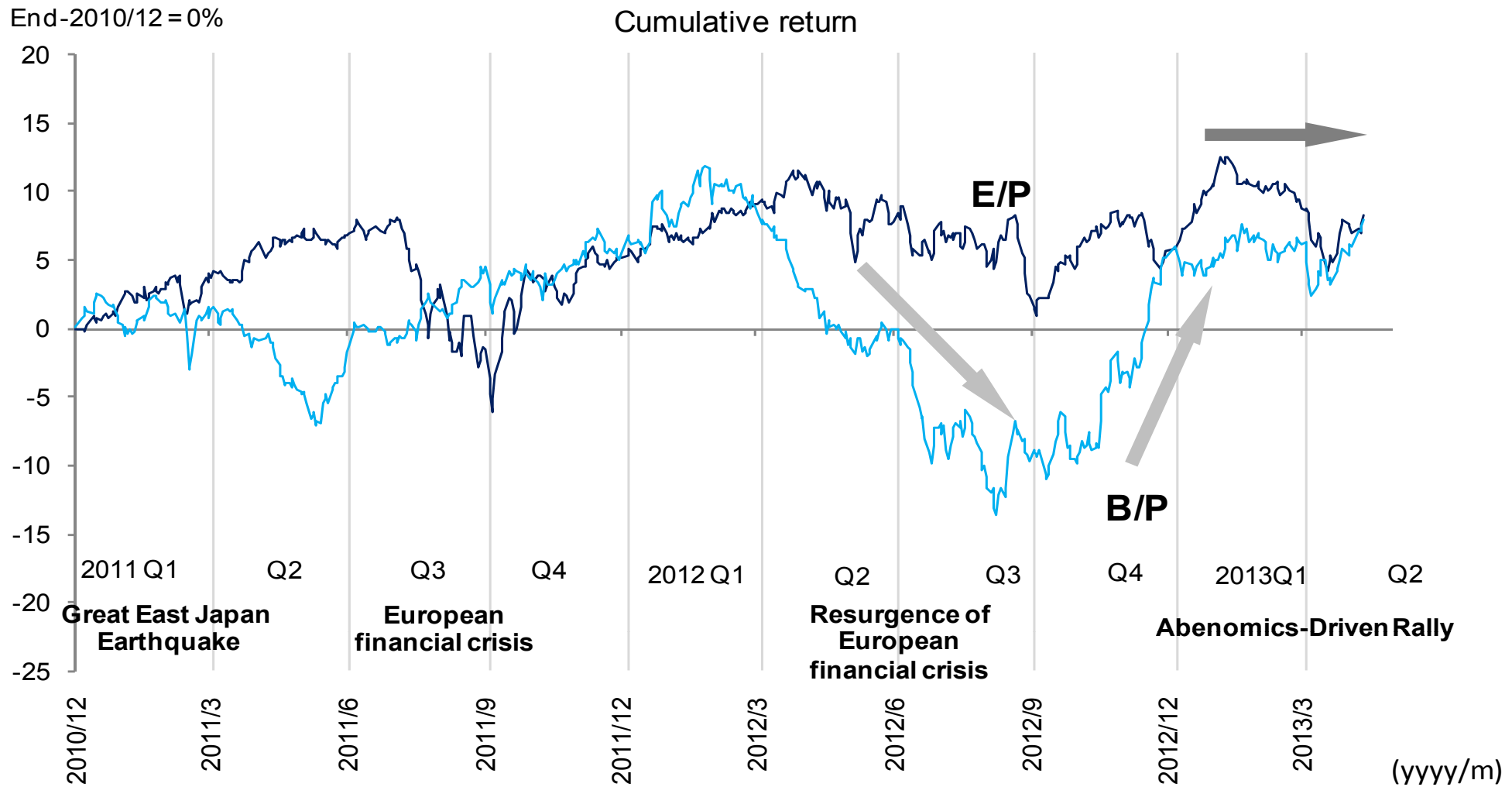
Note: Shows daily return of mimic portfolio (the composite factor of E/P, B/P, Revision and reversal(past 3month return)) and daily average return (Jensen's alpha), on an indexed basis, on 23 funds (domestic publicly offered investment trusts and nonresident investor funds) that invest in Japanese equities using a quant-based approach. Sample includes long-only, individual stock long-short, and market-neutral (long on individual stocks, short on index futures, for example) funds. Sample period is January 2011 through 10.May.2013 .

Source: Nomura

# Value factors worked as the main driver for the Q4 quant recovery

## But.....

### Daily performance of E/P and B/P

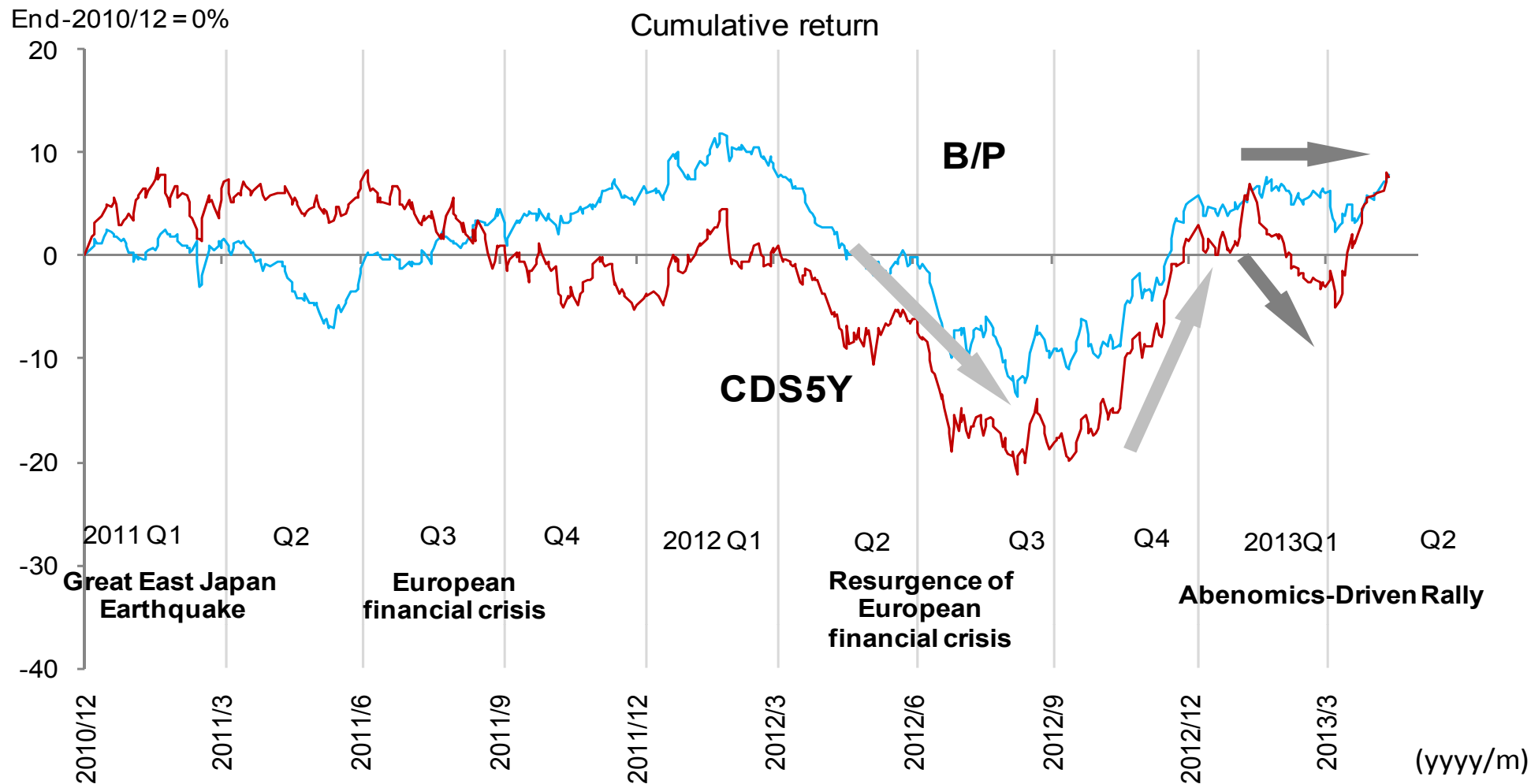


Note: Universe of TOPIX500 stocks is divided into 5 quintiles, with an equal number of stocks in each quintile, by factor value. Portfolios are rebalanced at the beginning of each month. Cumulative spread return (#5 - #1) is calculated on a daily basis (end-Dec. 2010 = 0). We did not take transaction costs into account. Analysis is based on historical share prices and does not guarantee future performance. Sample period is 4 Jan. 2011 - 10.May.2013.

Source: Nomura

# B/P factors were driven by credit risk factor

## Factor performance for B/P and 5-year CDS spreads



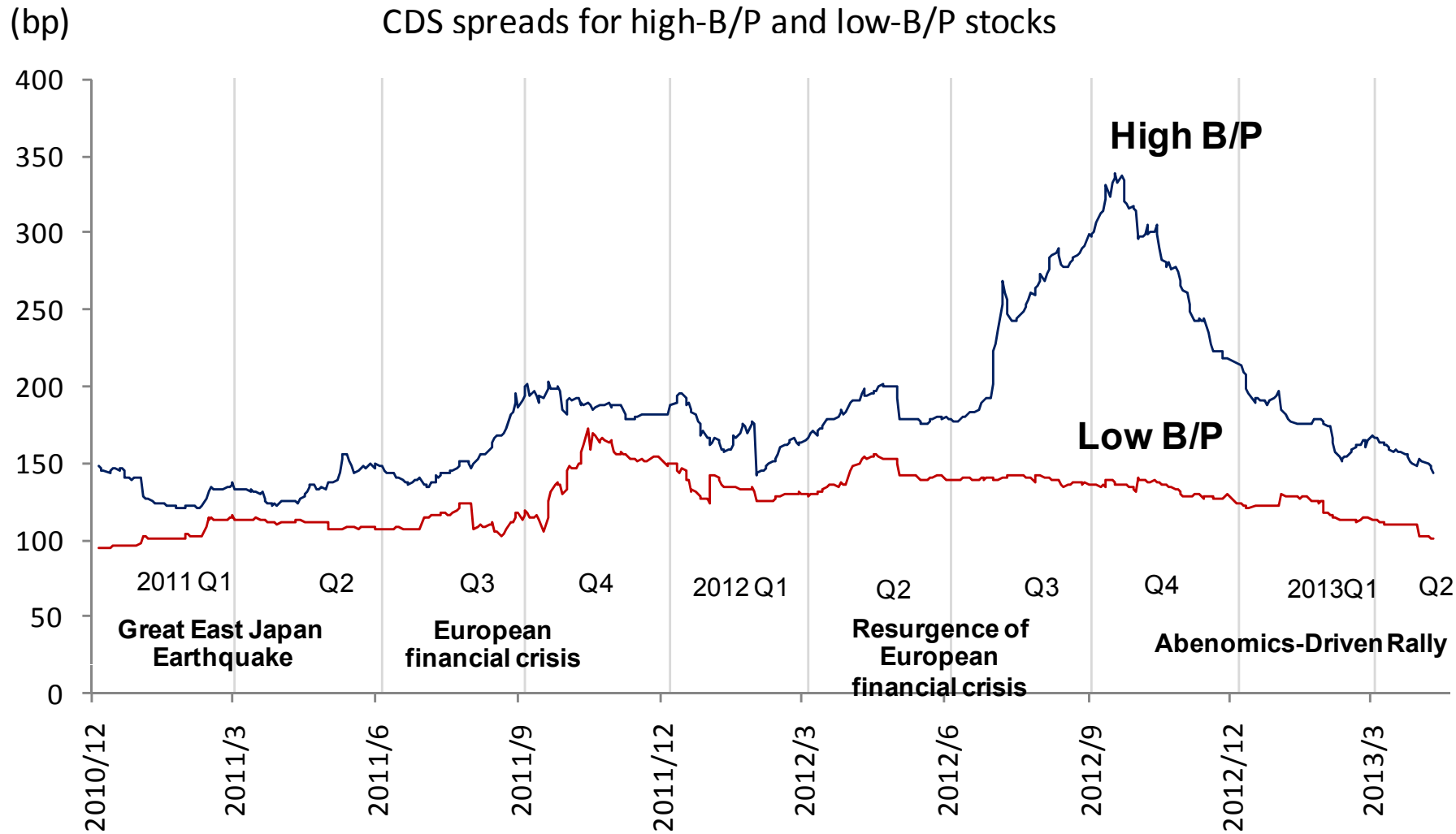
Note: We divided the universe of TOPIX 500 stocks into five groups in terms of both B/P and 5-year CDS spreads at the beginning of each month. Figure shows cumulative monthly returns on a strategy of going long on the group of stocks with the highest factor values and short on the group of stocks with the lowest factor values, for each factor. We did not take transaction costs into account. Analysis is based on historical share prices and does not guarantee future performance. Sample period is January 2011 through 10.May.2013.

Source: Nomura



# Credit risk factor may no longer be a driver for B/P factors

## CDS spreads for high-B/P and low-B/P stocks

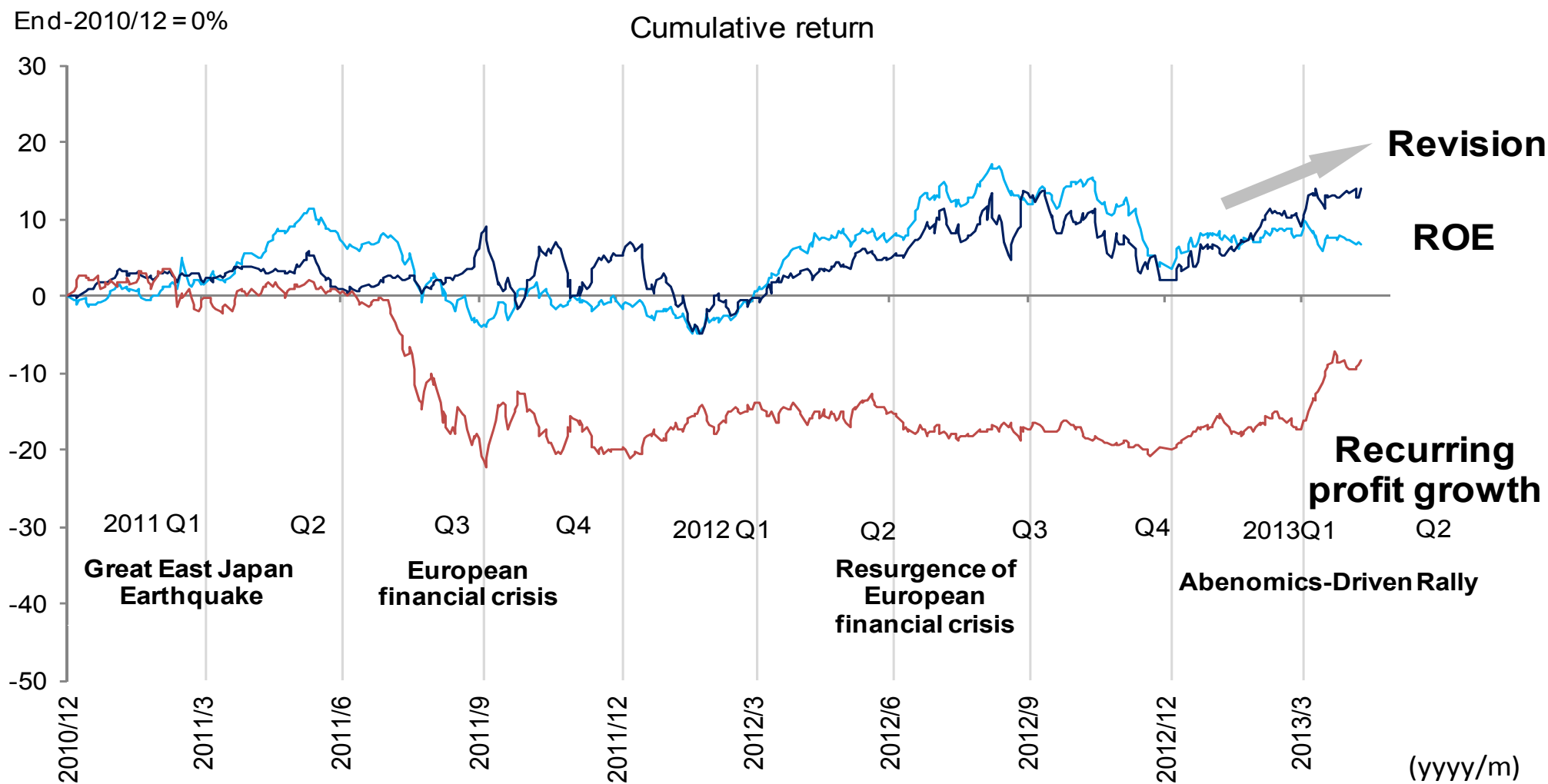


Note: Universe is TOPIX 500 stocks for which 5-year CDS spread data were available. We divided the universe into five groups on the basis of B/P factor values at the beginning of each month, and calculated the median 5-year CDS spread for the groups of stocks with the highest and lowest B/P, respectively. Sample period is January 2011 through 10.May.2013 .

Source: Nomura

# We expect profit-based factors to emerge as the next main driver **NOMURA**

## Daily performance of ROE, revision and recurring profit growth



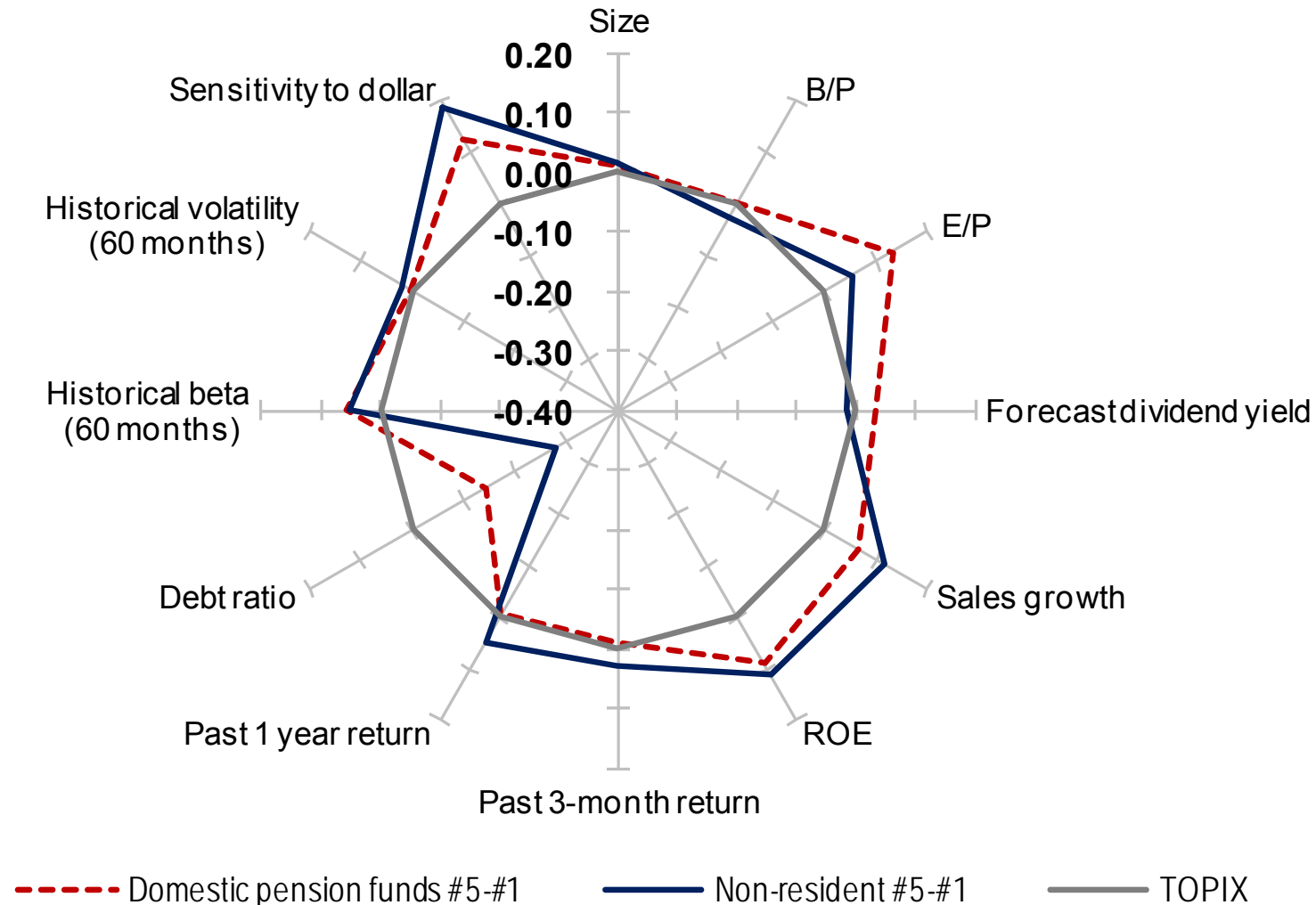
Note: Universe of TOPIX500 stocks is divided into 5 quintiles, with an equal number of stocks in each quintile, by factor value. Portfolios are rebalanced at the beginning of each month. Cumulative spread return (#5 - #1) is calculated on a daily basis (end-Dec. 2010 = 0). Sample period is 4 Jan. 2011 - 10 May.2013. We did not take transaction costs into account. Analysis is based on historical share prices and does not guarantee future performance.

Source: Nomura

# Nonresident investor purchases likely to work more positively for profit-based factors than value factors

Comparison of risk characteristics:

Stocks overweighted by domestic pension funds vs. Stocks overweighted by nonresident investors



Note: we calculated risk characteristics of each portfolio and plotted the historical average of each risk characteristic. We conducted a cross-sectional normalization of each set of data so that weighted average market cap was 0 and variance was 1 at the beginning of each month, adjusting standard deviation to  $\pm 3\sigma$  if it exceeded that level, and repeated this process three times.

Sample period is June 1995 through March 2013.

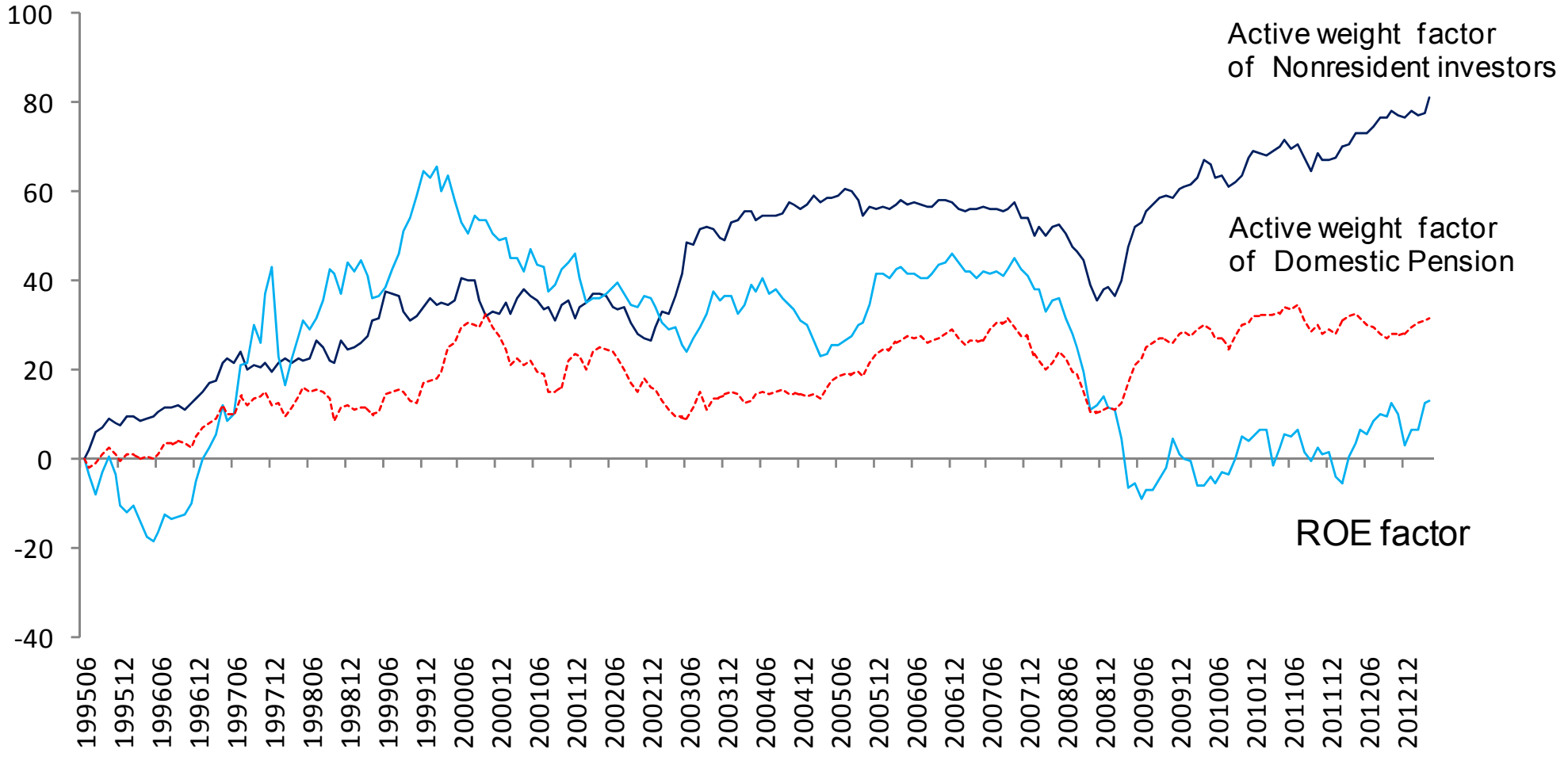
Source: Nomura

# Idea 1: Learning from non-resident investors' stock selection skills **NOMURA**

Performance of stocks overweighted by domestic pension funds and nonresident investors

(End-1995/6 = 0%)

Cumulative return



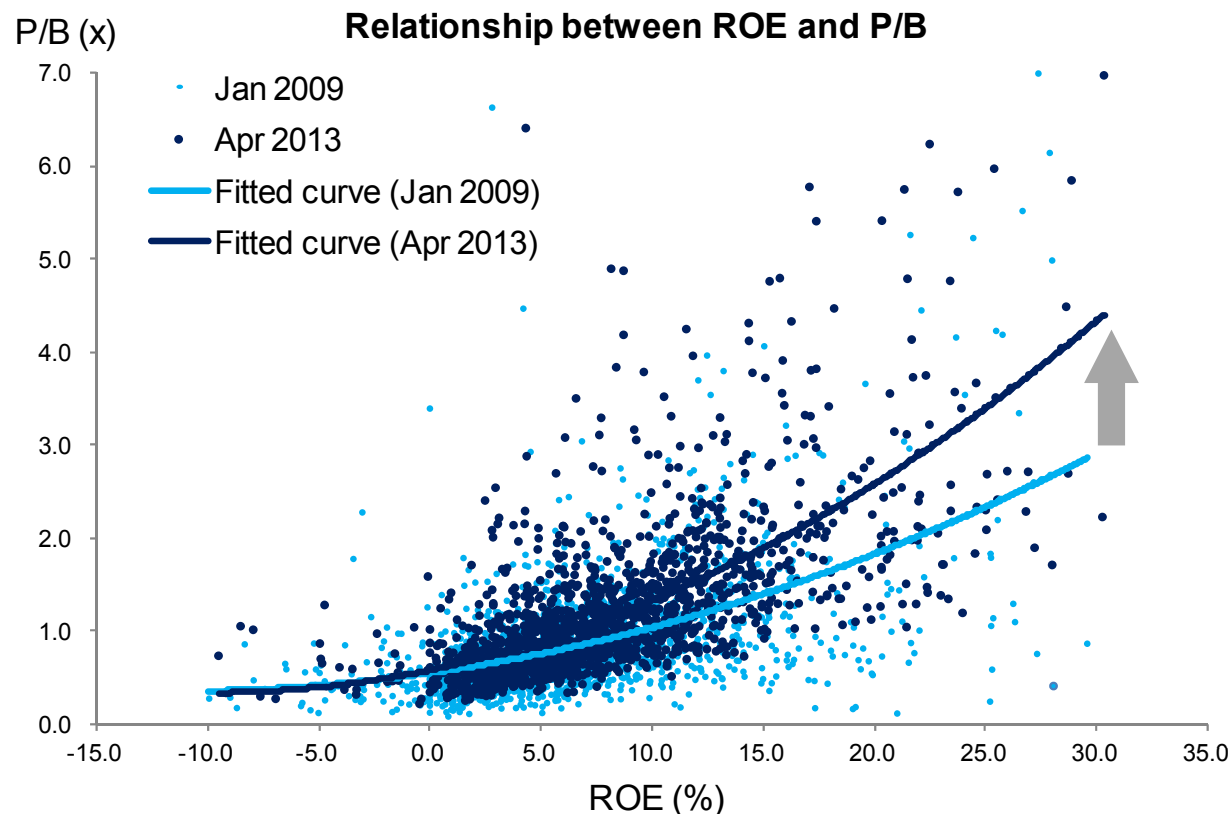
Note: We divided the universe of TSE-1 stocks into five groups based on their active weightings in the portfolios of nonresident investors at the start of each month. Figure shows cumulative monthly returns on a strategy combining long positions on stocks in the highest group (overweighted stocks) with short positions on stocks in the lowest group (underweighted stocks). We did not take transaction costs into account. Analysis is based on historical share prices and does not guarantee future performance. Sample period is June 1995 through April 2013.

# Company valuation and profitability closely associated

- A simple residual income model gives the relationship between **future ROE** and P/B ratio.

$$P_{i,t} = B_{i,t} + \sum_{j=1}^{\infty} \frac{ROE_{t+j} - r_E}{(1 + r_E)^j} B_{t+j-1}$$

The ROE-P/B curve: the cross sectional relationship between ROE and valuation (P/B)



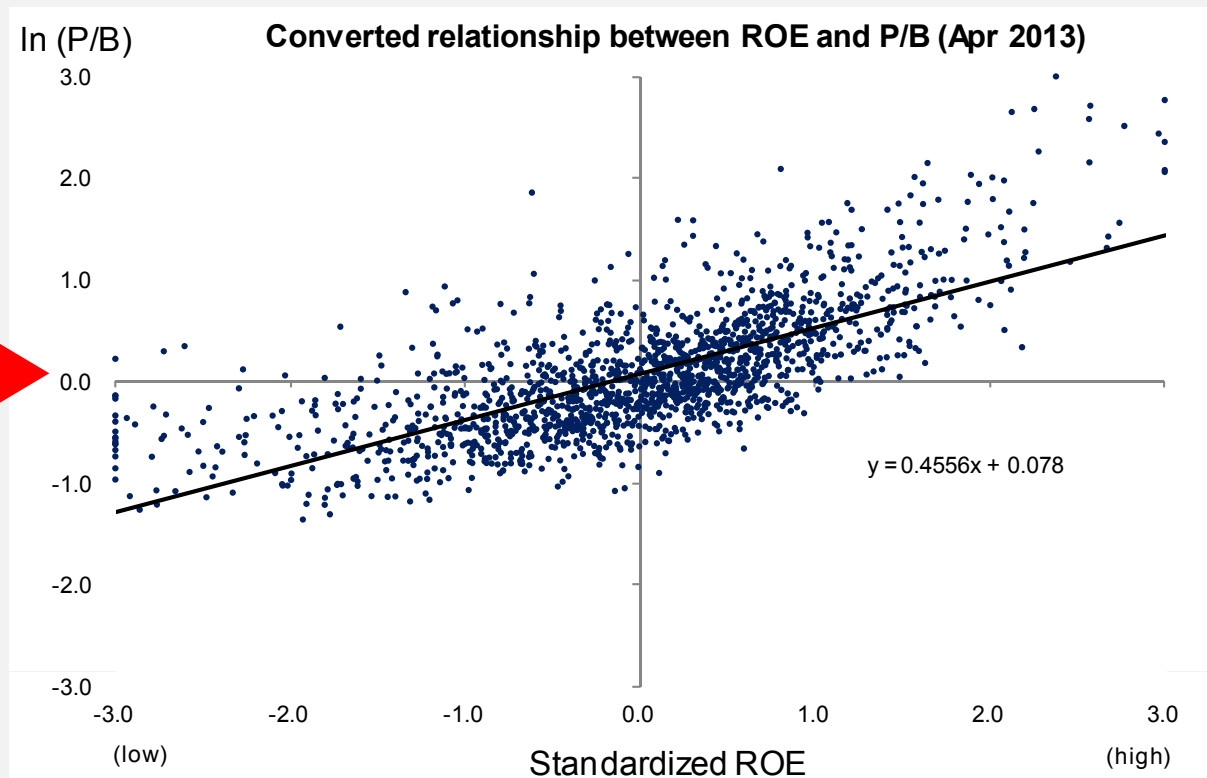
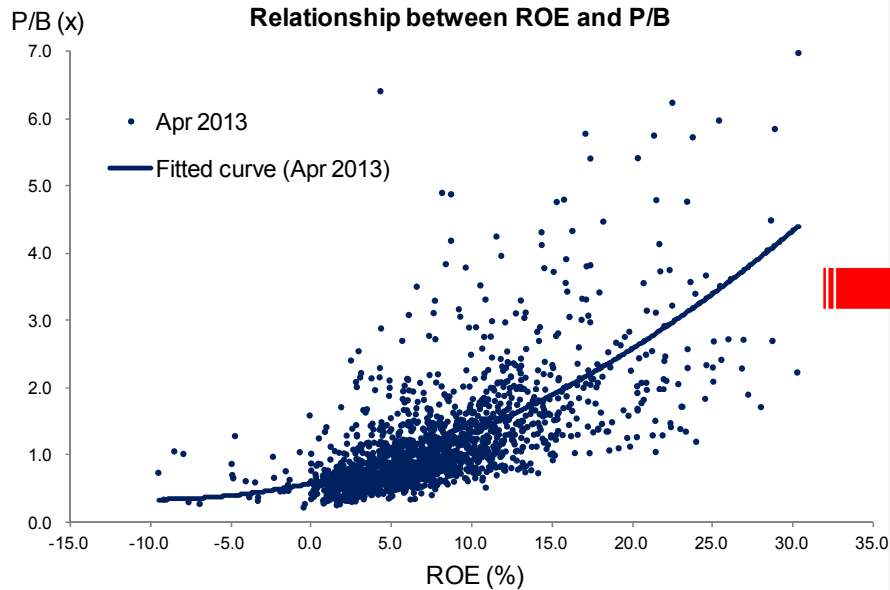
Note: We plotted each stock's expected ROE (next-FY forecast where available, otherwise current-FY forecast) on the x-axis and its P/B on the y-axis, in a two-dimensional scatter plot. Universes were TSE-1 stocks as at the beginning of April 2013 and the beginning of January 2009, respectively. To remove outliers, we excluded stocks in the top 1% and bottom 1% of the universe in terms of ROE from our analysis.

Source: Nomura

# The ROE-P/B curve fitted by converted model

## Relationship between ROE and valuation (log P/B)

The converted model : 
$$\ln\left(\frac{P_{i,t}}{B_{i,t}}\right) = \delta_t + \beta_t Z\_ROE_{i,t} + \epsilon_{i,t}$$

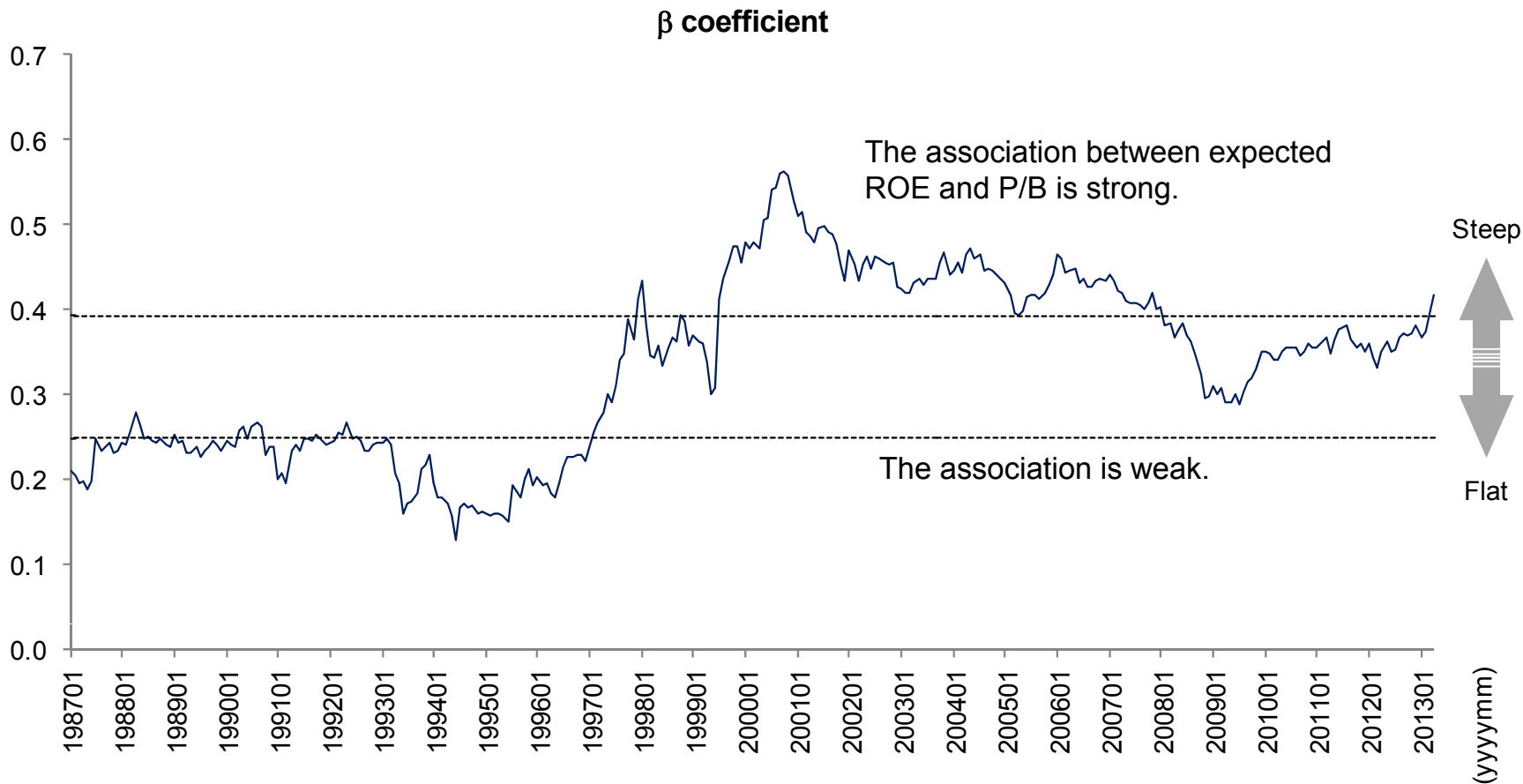


Note: We plotted each stock's standardized expected ROE on the x-axis and its log P/B on the y-axis, in a two-dimensional scatter plot. Universe was TSE-1 stocks at the beginning of April 2013. We estimated the best fit line using model  $\ln\left(\frac{P_{i,t}}{B_{i,t}}\right) = \delta_t + \beta_t Z\_ROE_{i,t} + \epsilon_{i,t}$ , where  $\ln(*)$  is the natural log of \*,  $\delta_t$  and  $\beta_t$  are the intercept and regression coefficient, respectively, at time  $t$ , and  $\epsilon_{i,t}$  is the residual. To estimate the regression coefficient, we standardized ROE, the explanatory variable, so that the average was 0 and the standard deviation was 1, and rounded any values beyond  $\pm 3\sigma$  to  $\pm 3\sigma$ . To remove outliers, we excluded stocks in the top 1% and bottom 1% of the universe in terms of ROE from our analysis.

# The ROE-P/B curve has recently steepened rapidly

- The slope of the curve ( $\beta$  coefficient) has recovered to the level prior to Lehman collapse.

Time series  $\beta$  coefficient for ROE-P/B curve

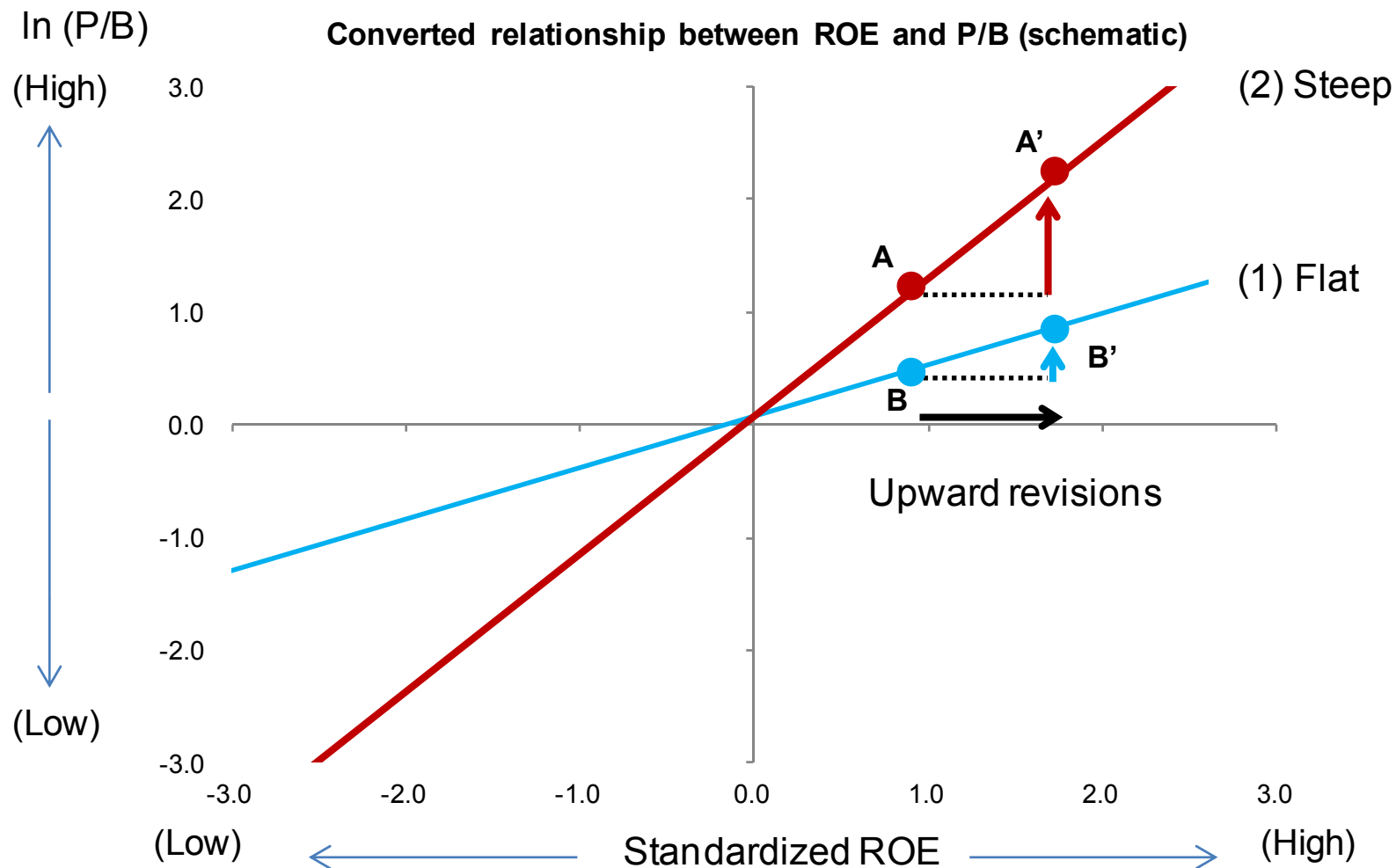


Note: Universe was TSE-1 stocks. We carried out a cross-sectional regression analysis using expected ROE and P/B ratios at the beginning of each month, and the model  $\ln\left(\frac{P_{i,t}}{B_{i,t}}\right) = \delta_t + \beta_t Z_{ROE_{i,t}} + \epsilon_{i,t}$ , where  $\ln(*)$  is the natural log of \*,  $\delta_t$  and  $\beta_t$  are the intercept and regression coefficient, respectively, at time  $t$ , and  $\epsilon_{i,t}$  is the residual. Sample period was January 1987 through April 2013. To estimate the regression coefficient, we standardized ROE, the explanatory variable, so that the average was 0 and the standard deviation was 1, and rounded any values beyond  $\pm 3\sigma$  to  $\pm 3\sigma$ . To remove outliers, we excluded stocks in the top 1% and bottom 1% of the universe in terms of ROE from our analysis. We used a low-pass filter to determine phases of the coefficient.

# What does the steepening of the curve indicate?

- We hypothesize that the slope of the curve indicates the effectiveness of revision strategy.

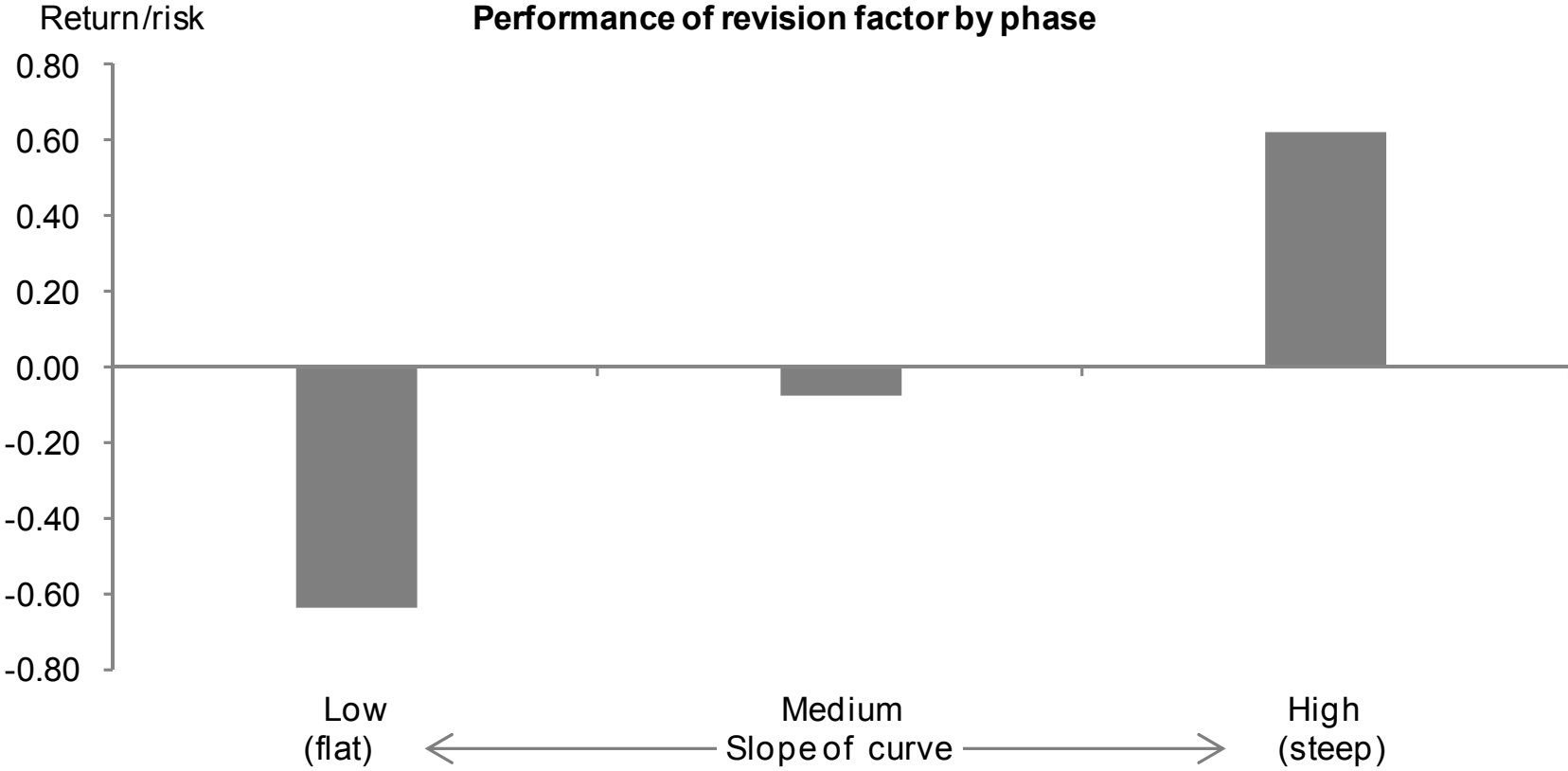
Schematic for phases when slope of ROE-P/B curve is high (steep) and low (flat)





# Revision factors are certainly effective when the curve becomes steep

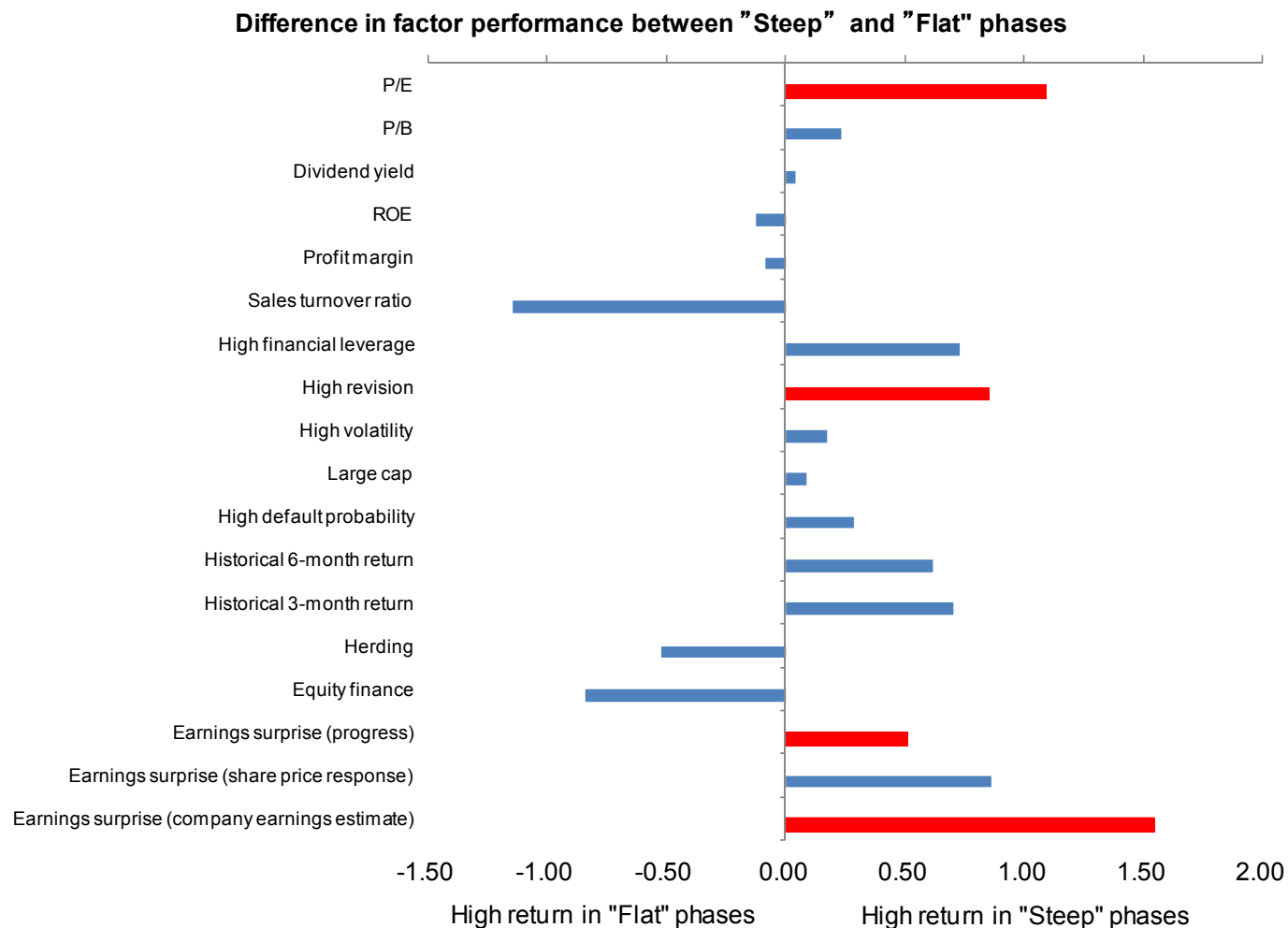
## Effectiveness of revision factor when the curve is steep / flat



Note: Universe was TSE-1 stocks. We investigated the effectiveness of the earnings forecast revision factor in high, medium, and low phases of regression coefficient  $\beta_i$ , estimated using model  $\ln\left(\frac{P_{i,t}}{B_{i,t}}\right) = \delta_t + \beta_t Z_{ROE_{i,t}} + \epsilon_{i,t}$ . To calculate factor returns, we divided the universe into five groups based on the revision factor, then calculated statistical data for monthly returns on a strategy of going long on the top group and short on the bottom group. We did not take transaction costs into account. Analysis is based on historical share prices and does not guarantee future performance. We divided the entire sample period into three groups based on coefficient value. We defined periods with coefficient values above the level that divides the top third from the middle third as high phases and periods with coefficient values below the level that divides the top third from the middle third as low phases.

# In steep phase, profit-based factors perform well

## Difference in factor performance between "Steep" and "Flat" phases



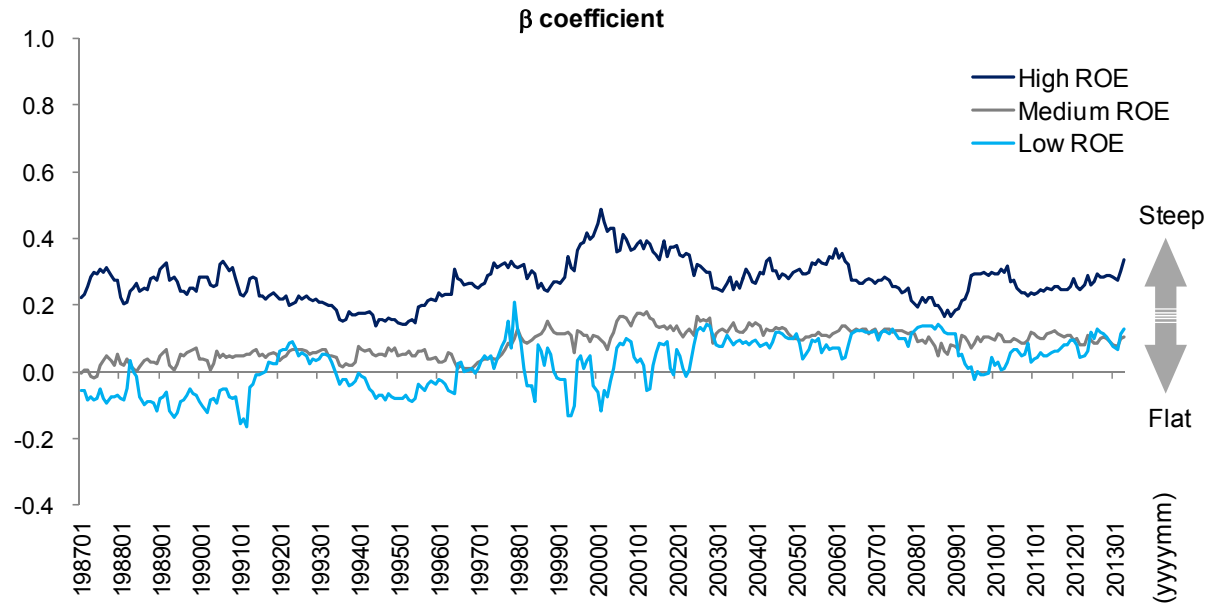
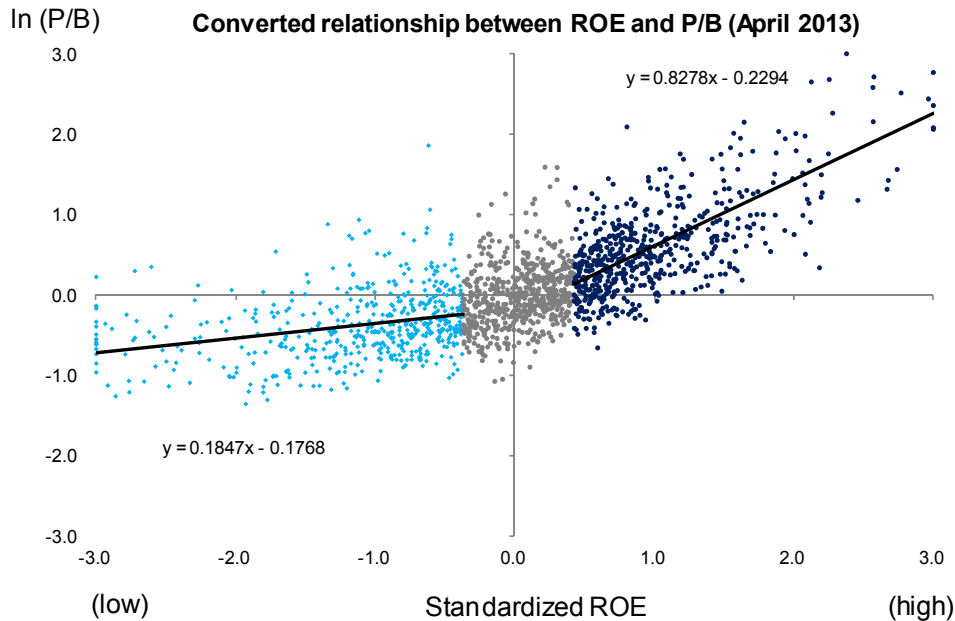
Note: Universe was TSE-1 stocks. We investigated the effectiveness of a key factors in high, medium, and low phases of regression coefficient  $\beta_i$ , model (\*)  $\ln\left(\frac{P_{i,t}}{B_{i,t}}\right) = \delta_i + \beta_i Z_{ROE_{i,t}} + \epsilon_{i,t}$ . To calculate factor returns, we divided the universe into five groups in terms of each factor, and calculated statistical data for monthly returns on a strategy of going long on the top group and short on the bottom group for each factor (but long on the bottom group and short on the top group in the case of P/E and P/B). Figure shows difference between time series average/standard deviation (annualized) in high and low phases. We did not take transaction costs into account. Analysis is based on historical share prices and does not guarantee future performance. We divided the entire sample period into three groups based on coefficient value. We defined periods with coefficient values above the level that divides the top third from the middle third as high phases and periods with coefficient values below the level that divides the top third from the middle third as low phases.

Source: Nomura

# The curve for high-ROE stocks has tended to steepen more than others

Relationship between ROE and valuation (log P/B) varies with level of ROE

$\beta$  coefficient of ROE-P/B curve for different levels of expected ROE



Note: We plotted each stock's standardized expected ROE on the x-axis and its log P/B on the y-axis, in a two-dimensional scatter plot. Universe was TSE-1 stocks at the beginning of April 2013. We divided the universe into three groups in terms of expected ROE at the beginning of each month and estimated the best fit line for each group using model  $\ln\left(\frac{P_{i,t}}{B_{i,t}}\right) = \delta_t + \beta_t Z\_ROE_{i,t} + \epsilon_{i,t}$ , where  $\ln(*)$  is the natural log of \*,  $\delta_t$  and  $\beta_t$  are the intercept and regression coefficient, respectively, at time  $t$ , and  $\epsilon_{i,t}$  is the residual. To estimate the regression coefficient, we standardized ROE, the explanatory variable, so that the average was 0 and the standard deviation was 1, and rounded any values beyond  $\pm 3\sigma$  to  $\pm 3\sigma$ . To remove outliers, we excluded stocks in the top 1% and bottom 1% of the universe in terms of ROE from our analysis.

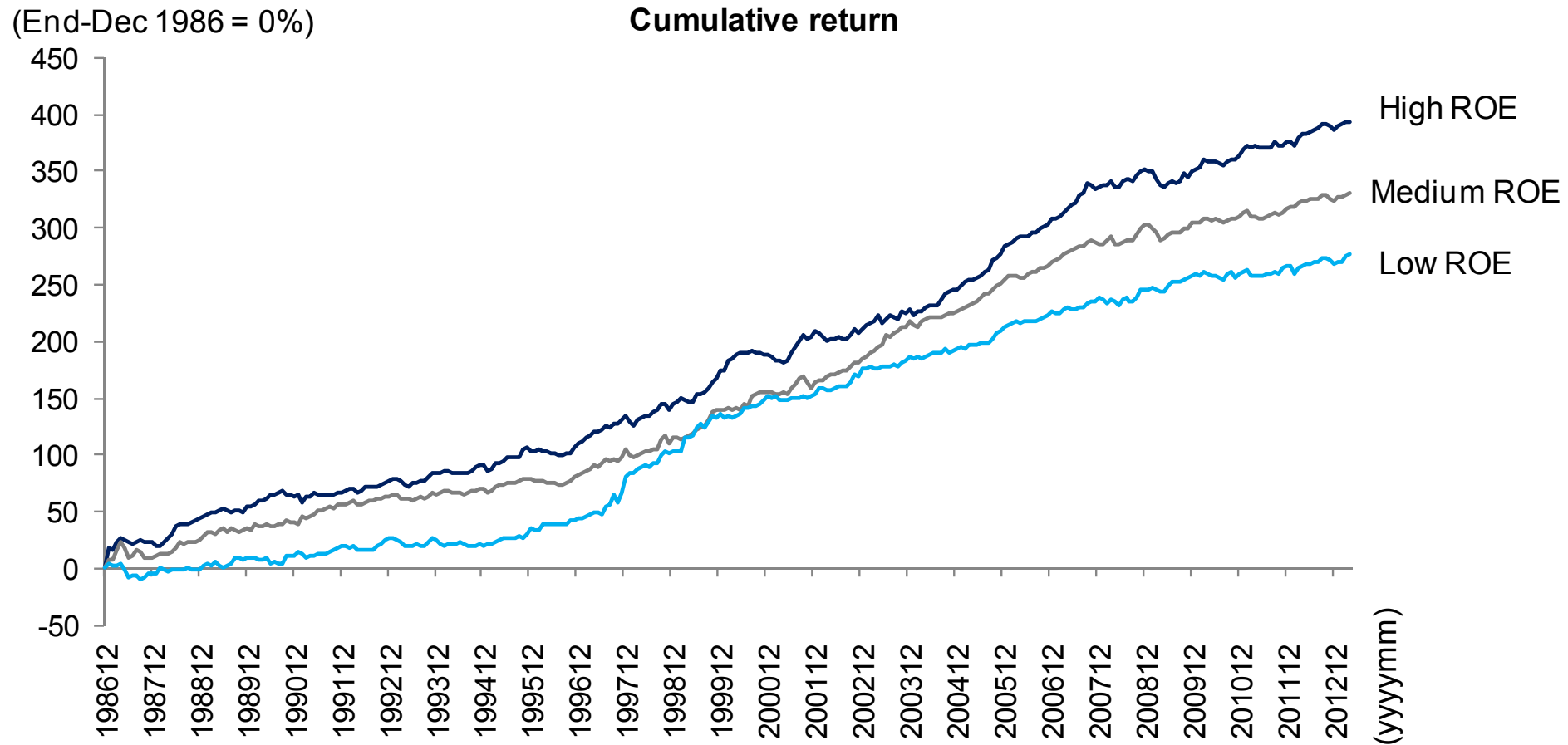
Source: Nomura

Note: Universe was TSE-1 stocks. We divided the universe into three groups based on expected ROE at the beginning of each month, and carried out a regression analysis for each group using model  $\ln\left(\frac{P_{i,t}}{B_{i,t}}\right) = \delta_t + \beta_t Z\_ROE_{i,t} + \epsilon_{i,t}$ . Shows time series data for regression coefficient  $\beta_t$ . Sample period was January 1987 through April 2013.

Source: Nomura

# Idea 2: revision factor is most effective for the high-ROE group

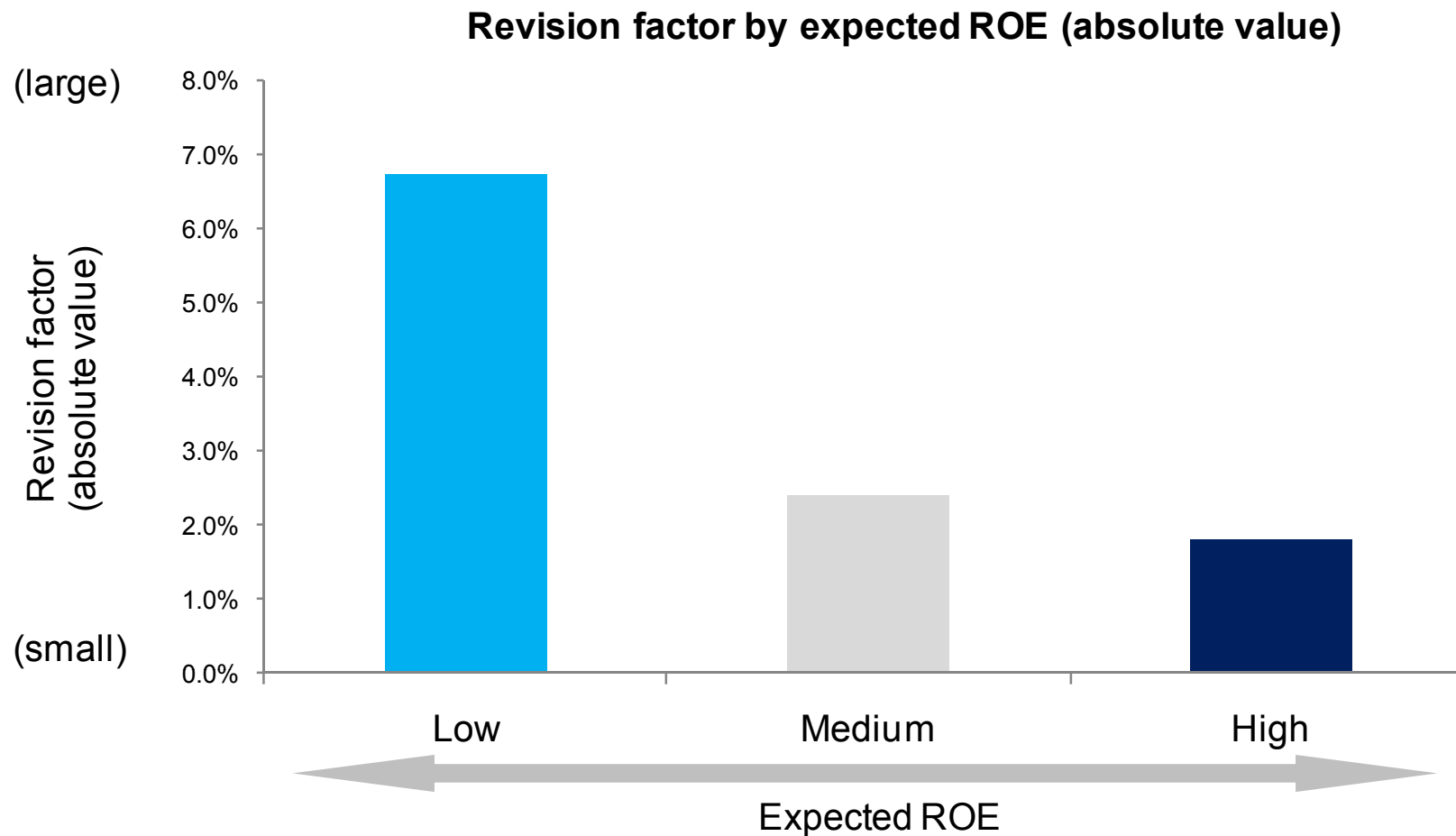
## Revision factor performance by expected ROE



Note: Universe was TSE-1 stocks. Sample period was January 1987 through 12 April 2013. We divided the universe into three groups based on expected ROE at the beginning of each month, divided these three groups into a further five groups each based on our earnings forecast revision factor, and calculated monthly returns on a strategy of going long on the top group and short on the bottom group in terms of the earnings forecast revision factor, for each ROE group. Figure shows cumulative monthly returns. We did not take transaction costs into account. Analysis is based on historical share prices and does not guarantee future performance.

# Earnings revisions were larger (smaller) for the (low) high-ROE group

The absolute value of revisions factor by expected ROE



Note: Universe was TSE-1 stocks. Sample period was January 1987 through April 2013. We divided the universe into three groups based on expected ROE at the beginning of each month. Figure shows time series averages of the absolute value of the revision factor for each group.

Source: Nomura

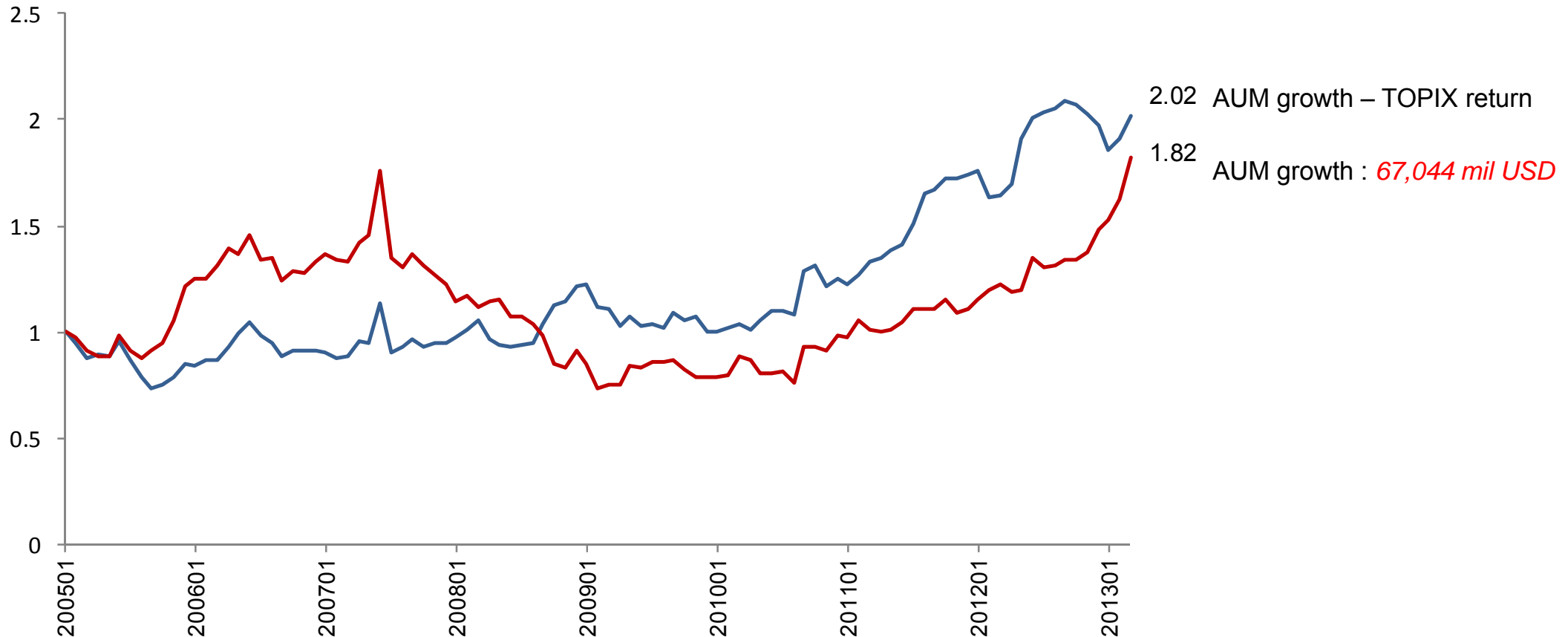
# Passive funds have shown growing presence in the Japanese equity market

- AUM for passive Japanese equity ETFs has grown remarkably and became double in the last 3 years.
- The BOJ is expected to keep buying Japanese stocks.

## AUM growth for passive Japanese equity ETFs

(end-Jan.2005 = 1.0)

AUM growth for passive Japanese equity ETFs



Note: Shows growth in AUM (assets under management) for passive ETFs (excluding leveraged and inverse ETFs) that track Japanese equities and are listed on major markets in the US and Asia, including Japan. The red line shows cumulative monthly growth in AUM from the beginning of 2005 (AUM at beginning of 2005 = 1). The blue line shows the cumulative spread between monthly AUM growth and monthly TOPIX return. Sample period is February 2005 through March 2013.

Source: Nomura

# Jan, Apr, Jul and Oct are periodical index rebalance season

## Anomalies might be seen around index events

### ■ Typical trading pattern of TOPIX-tracking fund

**Announcement Date**

5th business day  
in Jan / Apr / Jul / Oct

**Rebalance Date**

Day before last business day  
in Jan / Apr / Jul / Oct

Trading by passive funds

- (a) Stocks about to see a relative increase in FFW → Buy
- (b) Stocks about to see a relative decrease in FFW → Sell

### ■ Trading in typical event-driven strategy

**Announcement Date**

5th business day in October  
in Jan / Apr / Jul / Oct

**Rebalance Date**

Day before last business day  
in Jan / Apr / Jul / Oct

Investments carried out in advance on basis of forecasts

- (a) Stocks expected to see a relative increase in FFW → Long
- (b) Stocks expected to see a relative decrease in FFW → Short

Reverse trades to lock in profits

# Typical event-driven strategy

**Announcement Date**  
5th business day  
in Jan / Apr / Jul / Oct

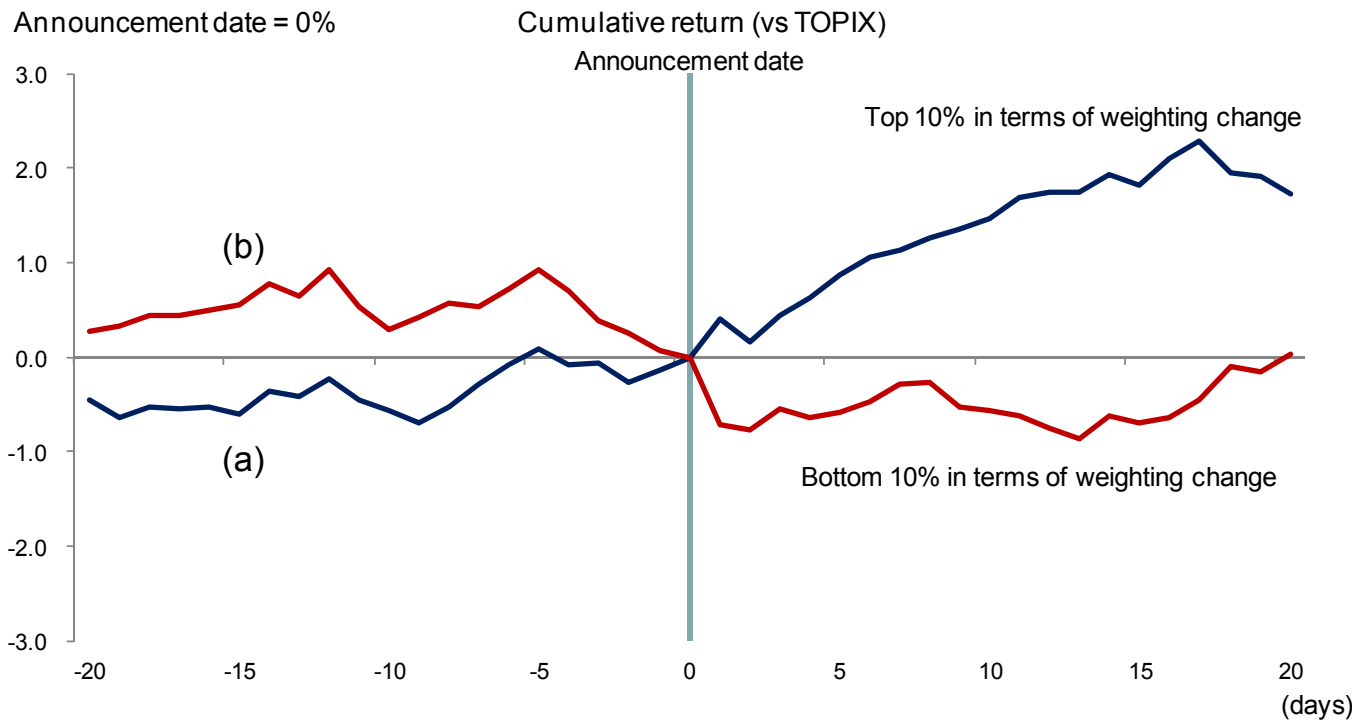
**Rebalance Date**  
Day before last business day  
in Jan / Apr / Jul / Oct

Investments carried out in advance on basis of forecasts

(a) Stocks expected to see a relative increase in FFW → Long

(b) Stocks expected to see a relative decrease in FFW → Short

Reverse trades to lock in profits

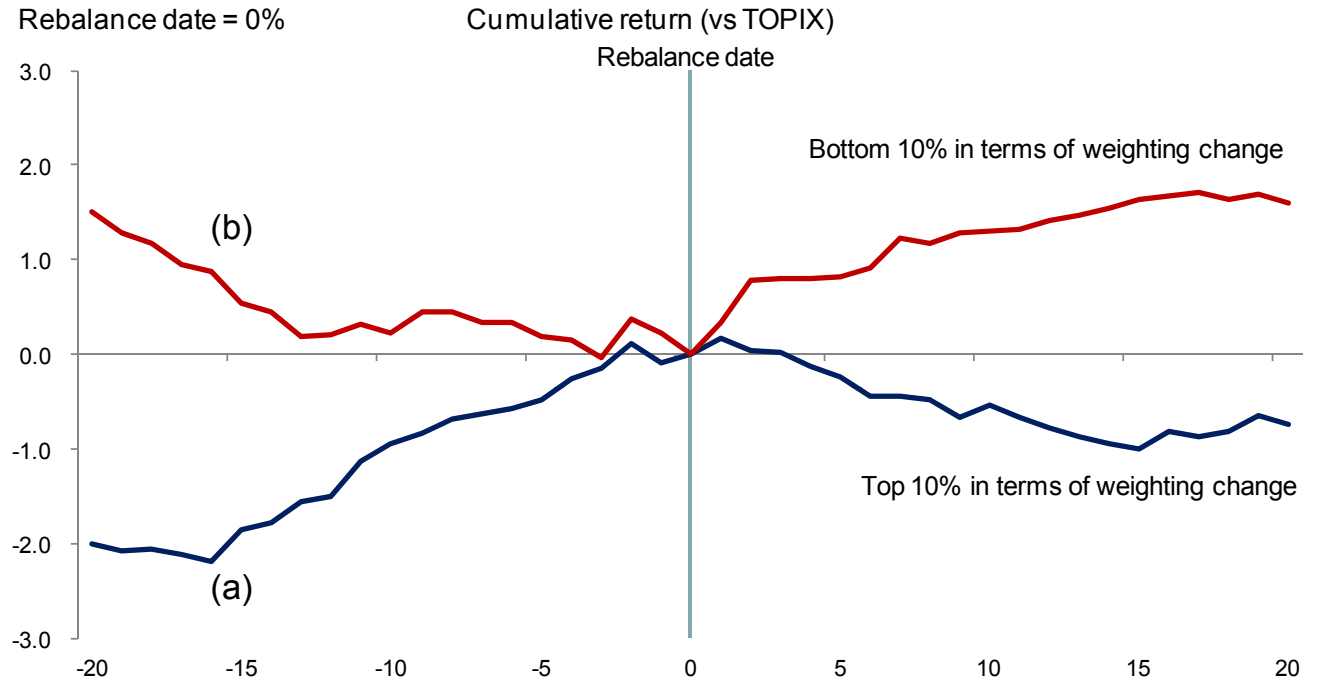
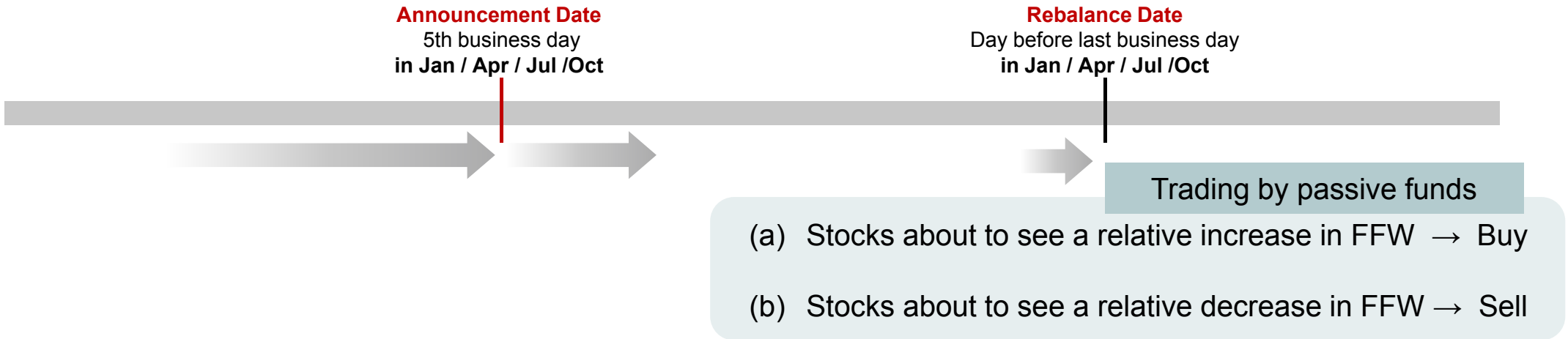


Note: In this event, all constituent stocks, including stocks unchanged in FFW, see a change in their TOPIX weighting. We compare TOPIX weightings based on post FFW and new FFW. Covering periodic reviews of FFW in every October from 2006 through 2011. Sample size for each groups is around 400 stocks. Average cumulative excess return relative to TOPIX from 20 trading days before announcement/date to 20 days after announcement/rebalance date. We did not take transaction costs into account. Analysis is based on historical share prices and does not guarantee future performance.

Source: Nomura



# After the rebalances of passive funds, return reversal is expected **NOMURA**



Note: In this event, all constituent stocks, including stocks unchanged in FFW, see a change in their TOPIX weighting. We compare TOPIX weightings based on post FFW and new FFW. Covering periodic reviews of FFW in every October from 2006 through 2011. Sample size for each groups is around 400 stocks. Average cumulative excess return relative to TOPIX from 20 trading days before effective date to 20 days after announcement/rebalance date. We did not take transaction costs into account. Analysis is based on historical share prices and does not guarantee future performance.

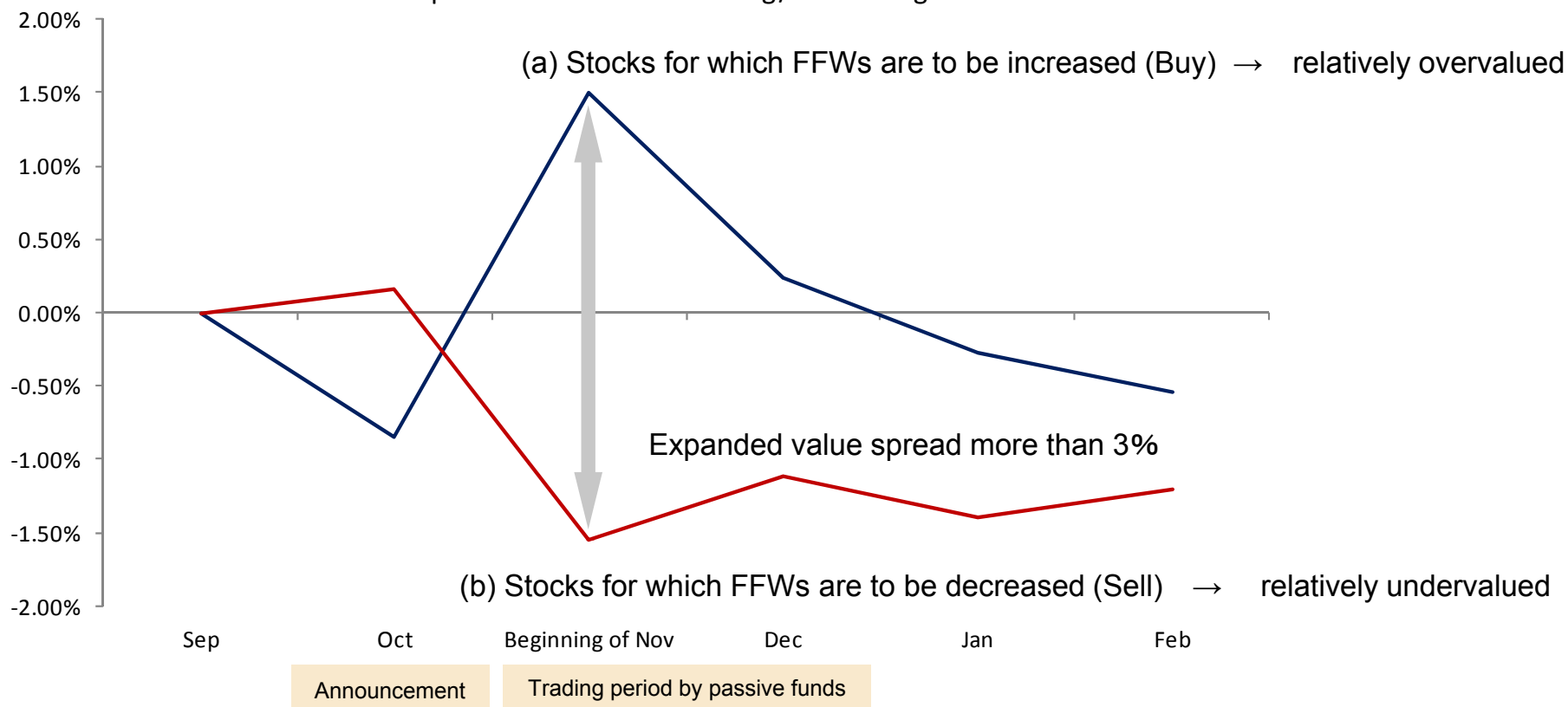
Source: Nomura

# Effect of FFW change on valuations

- B/P value spread of the stocks for which FFWs are increased and decreased is expanded more than 3%. → Then, the spread is eliminated gradually.

## Effect of FFW change on valuations

Value spread of stocks with increasing/ decreasing FFWs



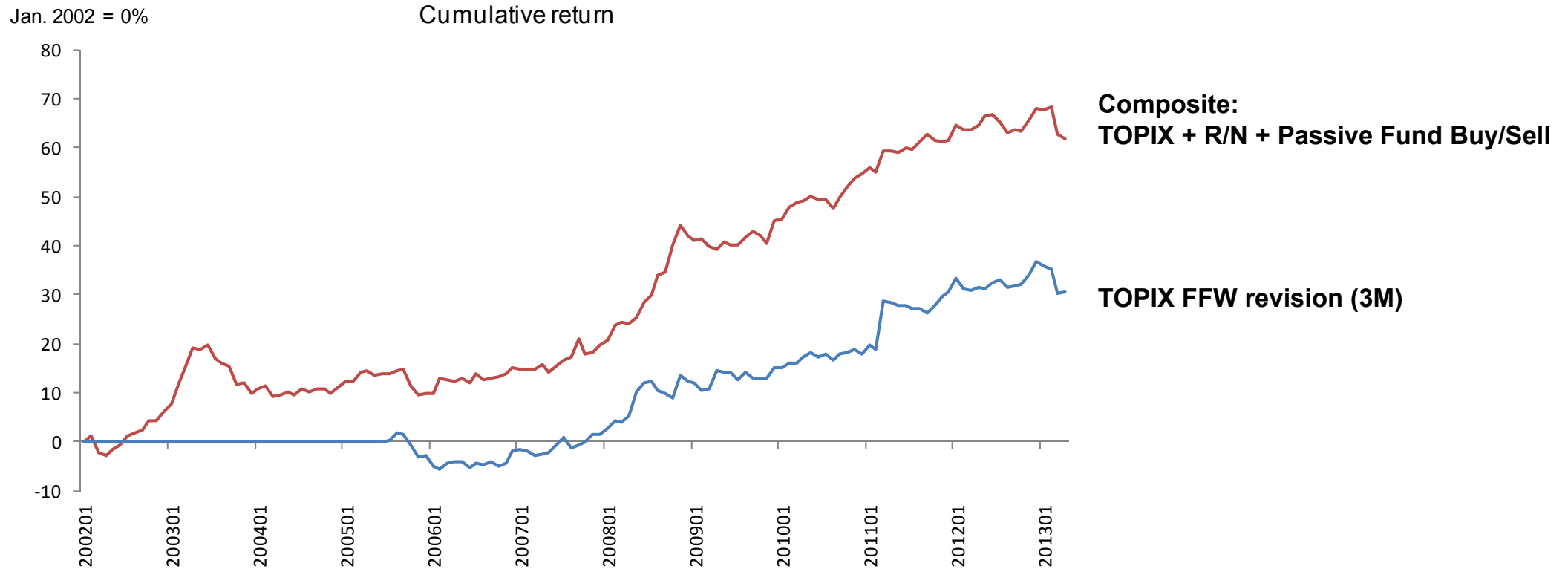
Note: Taking TSE-1 stocks as our universe, we calculated the average P/B of stocks for which the FFW (free-float weight) was increased or decreased, respectively, in the periodic FFW review for the TOPIX carried out in October each year from 2006 through 2011. We then calculated the spread between these two averages, respectively, and the average P/B for the universe (the value spread). We rebased the data so that the value spread in the month preceding the announcement of the October FFW review each year = 0%.

Source: Nomura

# Idea 3: investment strategy based on change in FFW

- Start investment at the beginning of the next month when passive funds are rebalanced.
- Short the stocks for which FFWs increased (overvalued), and long the stocks for which FFWs decreased (undervalued).

## Strategy utilizing FFW change



Note: We divided our universe of TSE-1 stocks into five groups on the basis of composite factor (TOPIX, R/N and Passive Fund Buy/Sell) at the beginning of each month. We then calculated the monthly return on a strategy combining long positions on the group of stocks with the lowest factor values (#1) and short positions on the group of stocks with the highest factor values (#5). Chart shows cumulative monthly return. We did not take transaction costs into account. Analysis is based on historical share prices and does not guarantee future performance. Sample period is January 2002 through April 2013.

Source: Nomura

- We have seen more favorable investment environment in the Japanese equity market for profit-based factors to perform well.
  
- We propose the following three investment ideas
  - (1) Strategy utilizing non-resident investors' stock selection skills
  - (2) Revision strategy in the phase when the ROE-P/B curve becomes steep
  - (3) Contrarian strategies based on passive fund trading

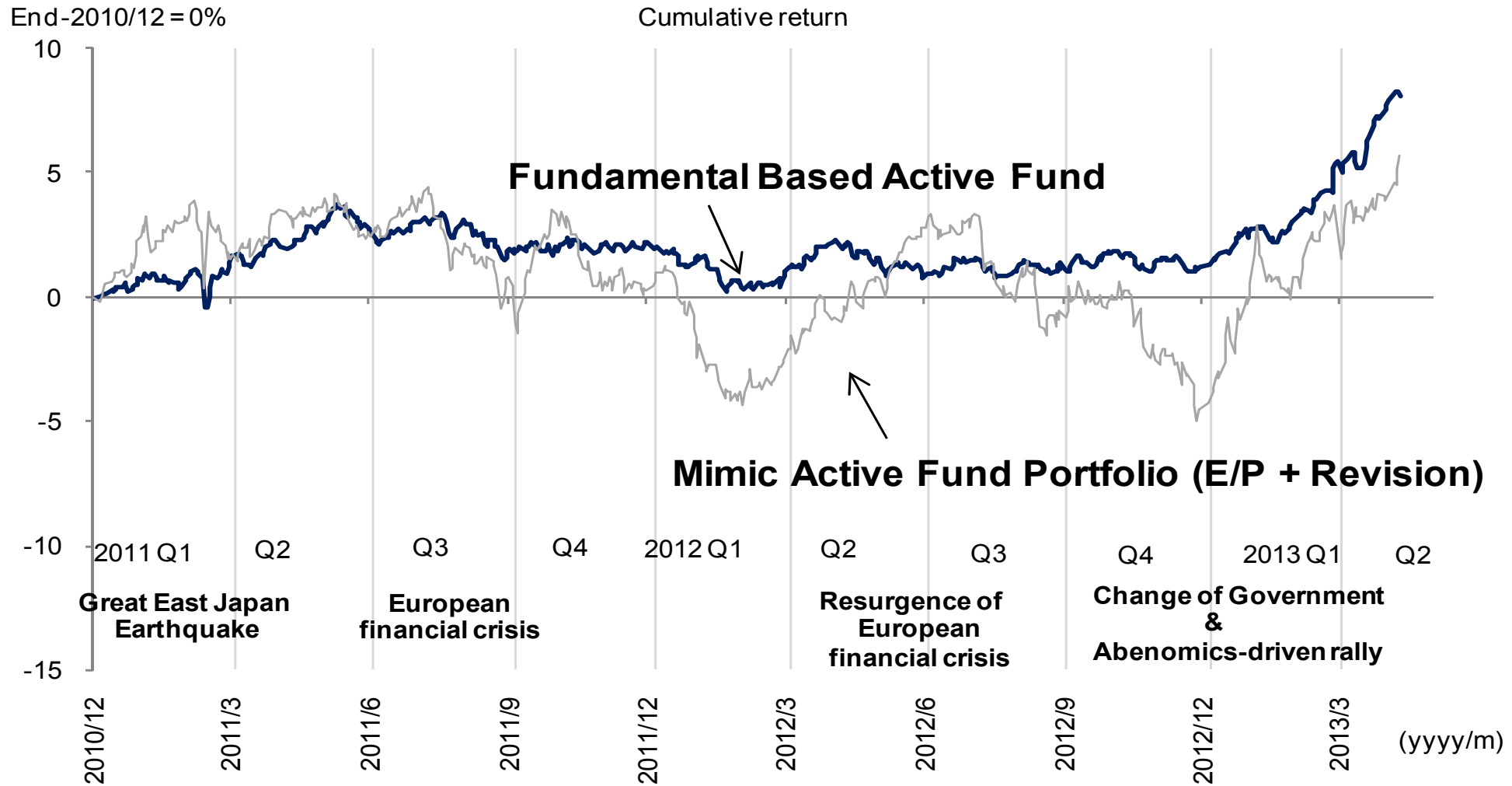
# Appendix (1): definitions of factors

## Definitions of factors

Factor	Factor definition
1 P/E	#1 (undervalued) - #5 (overvalued) Market cap / earnings forecast (next-FY forecast w here available; I/B/E/S consensus forecast > Toyo Keizai forecast)
2 P/B	#1 (undervalued) - #5 (overvalued) Market cap / actual shareholders' equity
3 Dividend yield	#5 (high) - #1 (low) Calculated from Nikkei estimated dividends
4 ROE	#5 (high) - #1 (low) Earnings forecast / actual shareholders' equity (next-FY forecast w here available; IFIS consensus forecast > Toyo Keizai forecast)
5 Profit margin	#5 (high) - #1 (low) Earnings forecast / sales forecast (next-FY forecast w here available; IFIS consensus forecast > Toyo Keizai forecast)
6 Sales turnover ratio	#5 (high) - #1 (low) Sales forecast / total assets (next-FY forecast w here available; IFIS consensus forecast > Toyo Keizai forecast)
7 High financial leverage	#5 (high) - #1 (low) Total assets / Net Equity
8 High revision	#5 (high) - #1 (low) Recurring profit forecast / past 3-month average recurring profit forecast - 1 (IFIS consensus forecast w here available, otherwise Toyo Keizai forecast)
9 High volatility	#5 (high) - #1 (low) Standard deviation of daily share price return (past 60 days)
10 Large cap	#5 (large cap) - #1 (small cap) Log market cap
11 High default probability	#5 (high) - #1 (low) Estimated using Merton options theory
12 Historical 6-month return	#5 (high) - #1 (low)
13 Historical 3-month return	#5 (high) - #1 (low)
14 Herding	#5 (high) - #1 (low) Active fund ownership as % of total shares out * Active funds defined as all the active (long-only) funds in the Japanese equities category, as categorized by The Investment Trusts Association, Japan
15 Equity finance	#5 (high) - #1 (low) Change in no. of shares out compared to 24 months previously
16 Earnings surprise (progress)	#5 (high) - #1 (low) Calculated from cumulative recurring profits (from Q1 through most recent quarter) as % of consensus recurring profit forecast (FY1)
17 Earnings surprise (share price response)	#5 (high) - #1 (low) Cumulative return versus TOPIX from most recent results announcement date to two trading days after
18 Earnings surprise (company earnings estimate)	#5 (high) - #1 (low) Company estimate versus consensus recurring profit forecast (FYU1) (IFIS consensus forecast > Toyo Keizai forecast)

# Appendix (2) performance of Japanese fundamental-based active funds

## Average performance of Japanese fundamental-based active funds

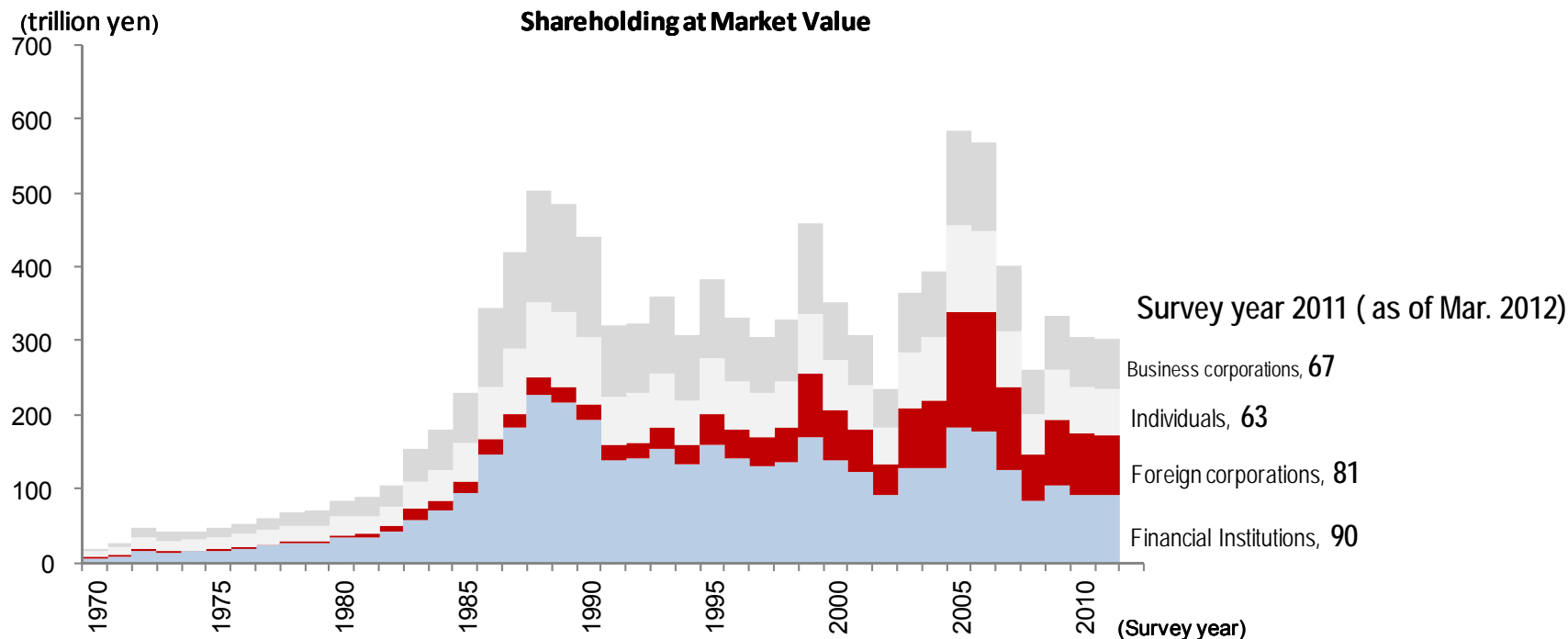


Note: Shows average daily return (Jensen's alpha), on an indexed basis, for all long-only active domestic publicly offered investment trusts (based on Investment Trusts Association, Japan categories). Sample period is January 2011 through 10.May.2013.

Source: Nomura

# Appendix (3): transition in shareholding at market value by investor category

## Transition in shareholding at market value by investor category



Note: All domestic stock exchanges (Tokyo, Osaka, Nagoya, Fukuoka and Sapporo) in Japan. The market value of public pension funds is not included in that of Annuity Trusts.

- Business corporations: All companies incorporated in Japan (ex "Financial institutions" and "Securities companies").
- Individuals and others: Individuals and non-incorporated groups with Japanese nationality, regardless of their place of residence.
- Foreign corporations: Corporations that were established based on foreign laws; foreign and municipal governments, and entities that are not incorporated; and individuals whose nationalities are other than Japanese, regardless of their place of residence.
- Financial institutions
  - > City, regional banks, etc.: Regular Japanese banks licensed under the Banking Act and the Long-Term Credit Bank Act (There have been no regular Japanese banks licensed under the Long-Term Credit Bank Act since the 2006 Shareownership Survey)
  - > Trust banks: Trust banks that are members of the Trust Companies Association of Japan
  - > Investment trusts: Trust assets of trustors that are stipulated in the Investment Trust Act (Act on Investment Trusts and Investment Corporations), and whose nominees (trustees) are banks that conduct trust business
  - > Annuity trusts: Employees' pension funds that are stipulated in the Employees' Pension Insurance Act, and corporate pensions stipulated in the Defined-Benefit Corporate Pension Act or the Defined Contribution Pension Act, whose nominees (trustees) are banks that conduct trust business. (excluding public pensions under management)
  - > Life insurance companies: Life insurance companies that are stipulated in the Insurance Business Act
  - > Non-life insurance companies: Non-life insurance companies that are stipulated in the Insurance Business Act
  - > Other financial institutions: Financial institutions other than those stipulated above, including credit unions (shinkin banks), credit associations, agriculture-related financial institutions, mutual aid associations, and government-related financial institutions, etc.

# Appendix (4): outline regarding periodic review of FFW

## Outline of calculating FFW

Outline	
(1)	Estimate the amount of non-free-float shares using publicly available documents released by listed companies.
(2)	Calculate non-FFW. (Non-free-float shares / listed shares)
(3)	Obtain the FFW by removing the non-free-float factor from 1. (1 – Non-FFW) ※TSE multiply the FFW by 0.75x for stocks recognized as having low liquidity and newly listed stocks

Source: Nomura based on *Tokyo Stock Exchange Index Guidebook published 9 February 2012*

## Periodic Review

Settlement Term	Announcement Date	Effective Date
January – March	Fifth business day of October	Last business day of October
April – June	Fifth business day of January	Last business day of January
July – September	Fifth business day of April	Last business day of April
October - December	Fifth business day of July	Last business day of July

※The TSE may review FFW in the cases (allocation of new shares to a third party, etc) where it seems that the existing FFW is expected to be significantly affected.

Source: Nomura based on *Tokyo Stock Exchange Index Guidebook published 9 February 2012*

## Definitions of free-float shares and non-free-float shares

### Estimation of non-free-float shares

Shares held by the top 10 major shareholders, treasury stocks, shares held by the board of directors, and other shares TSE seems not available for trading in the market.

### TSE may treat shares held by the top 10 major shareholders as free-float shares in the following case.

Condition	Major shareholder
<b>As a general rule, shares considered as free-float.</b>	Securities finance companies, securities depositories, nominees for depository Receipts
<b>Shares likely to be seemed as free-float.</b> Cases where any of the following conditions are met and the TSE deems it appropriate to consider such shares as free-float. - There are descriptions in the Securities Report on the type of trust, the purpose of purchase of shares, etc. - It is clear that shares are held by several beneficiaries and managed centrally - It is clear that shares are held for margin Transaction	Trust banks, master trusts, global custodians, insurance companies, securities companies, etc.

Source: Nomura based on *Tokyo Stock Exchange Index Guidebook published 9 February 2012* 31



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