E-Commerce Sales Share Forecasting and Rolling Backtests

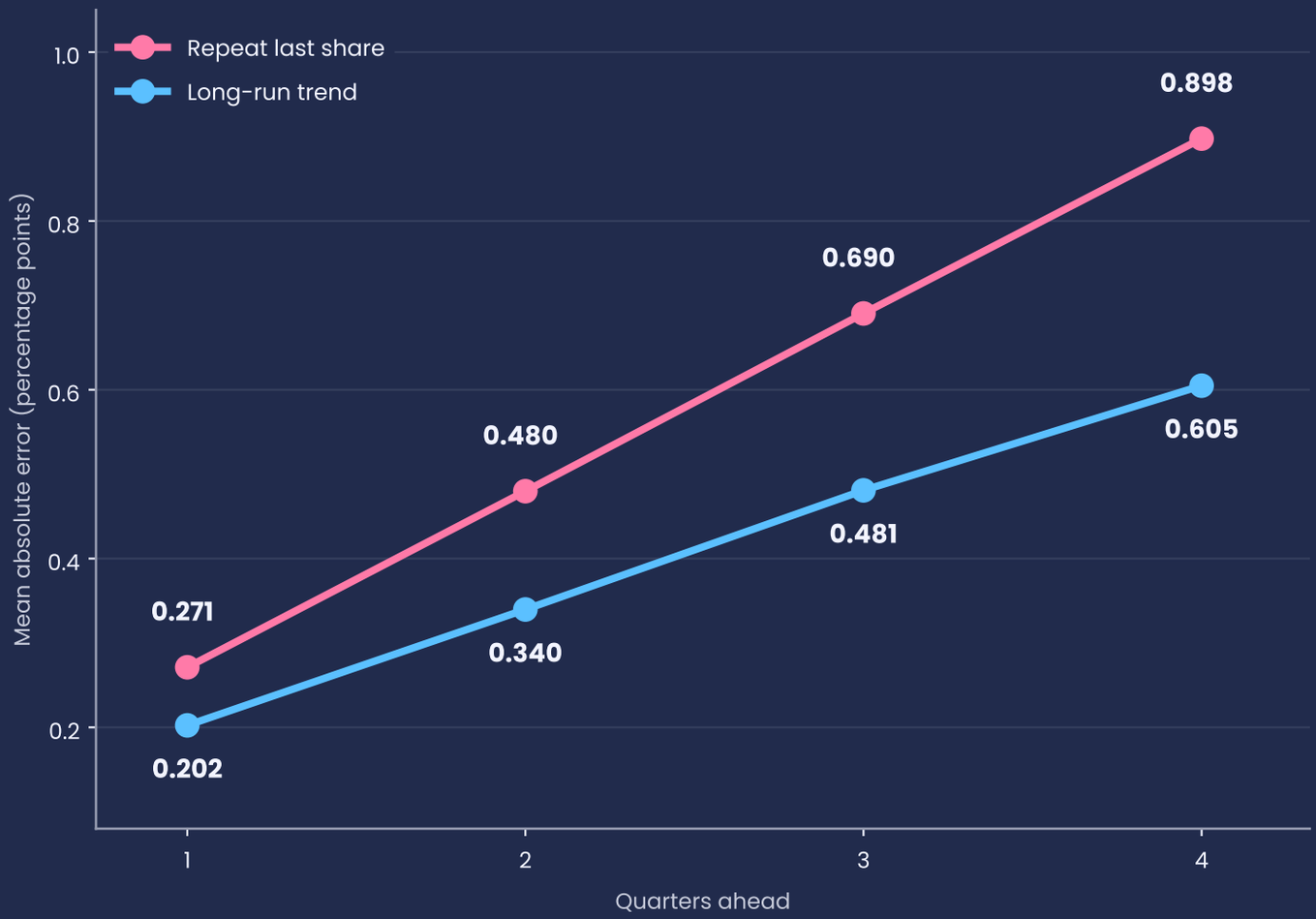
25.4%

lower one-quarter forecast error from a long-run trend than from repeating the last online share, across 67 rolling forecasts.

0.202	84%	33%	17.3%
points of error one quarter ahead	of one-quarter forecasts where the trend was closer	error reduction four quarters ahead	trend forecast for next quarter, ±0.2

EXHIBIT 1

Forecast error grows with the planning horizon



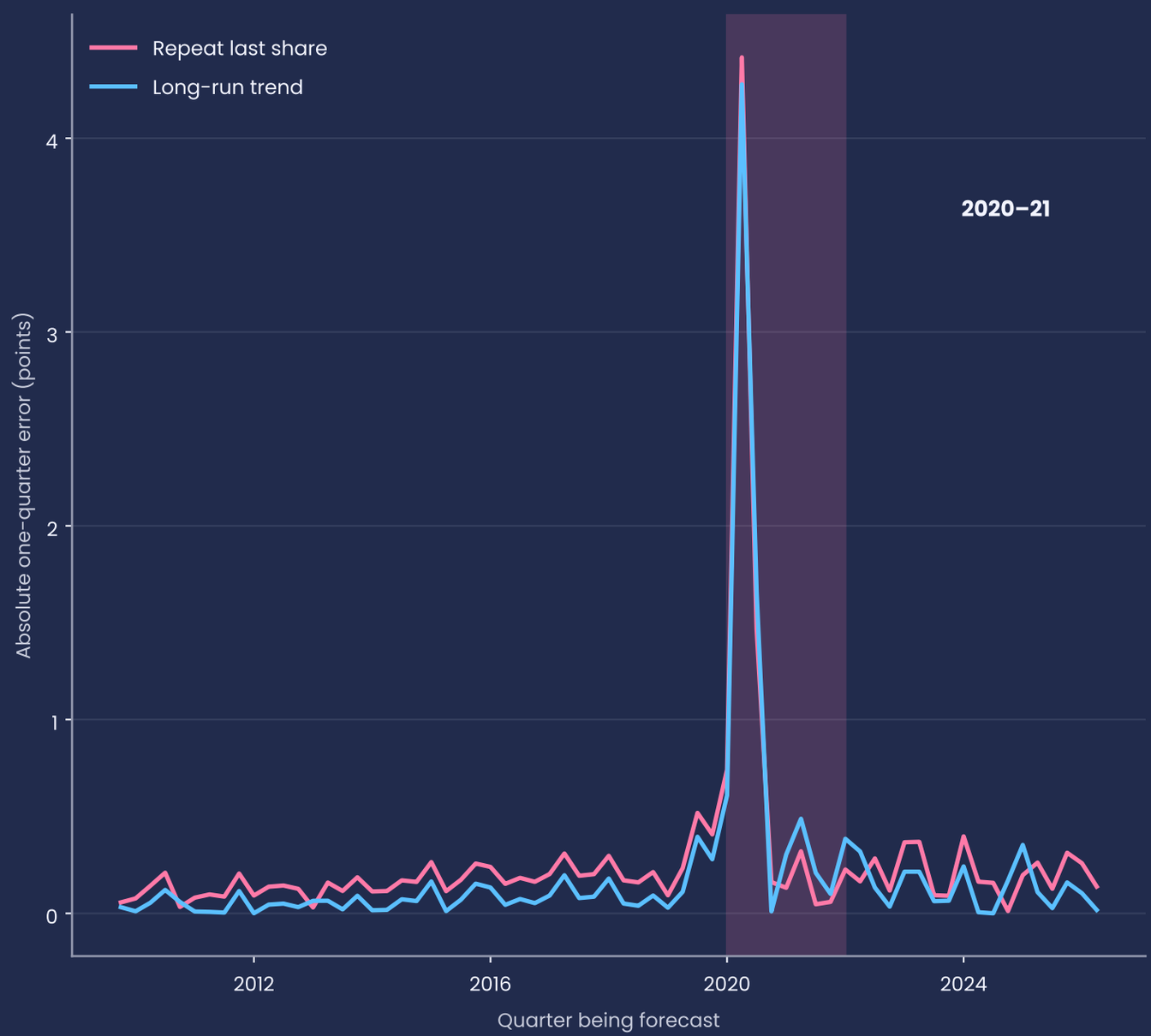
Both errors rise roughly linearly; the trend line rises more slowly.

What the analysis shows

- A drift forecast (last share plus the average historical quarterly gain) beats repeating the last share at every horizon: MAE 0.202 against 0.271 at one quarter and 0.605 against 0.898 at four.
- The advantage grows with the horizon, from 25% at one quarter to 33% at four, because the naive forecast misses a full year of trend.
- It is consistent as well as large on average: the trend was the closer forecast in 84% of one-quarter cases and 84% of four-quarter cases.
- Repeating the last share is biased low by 0.19 points a quarter; the trend forecast is close to unbiased (+0.07).
- The advantage reversed in 2020–21: one-quarter error was 0.96 for the trend against 0.92 for the naive forecast, as the pandemic jump and its unwinding broke the trend.

EXHIBIT 2

One-quarter error through time

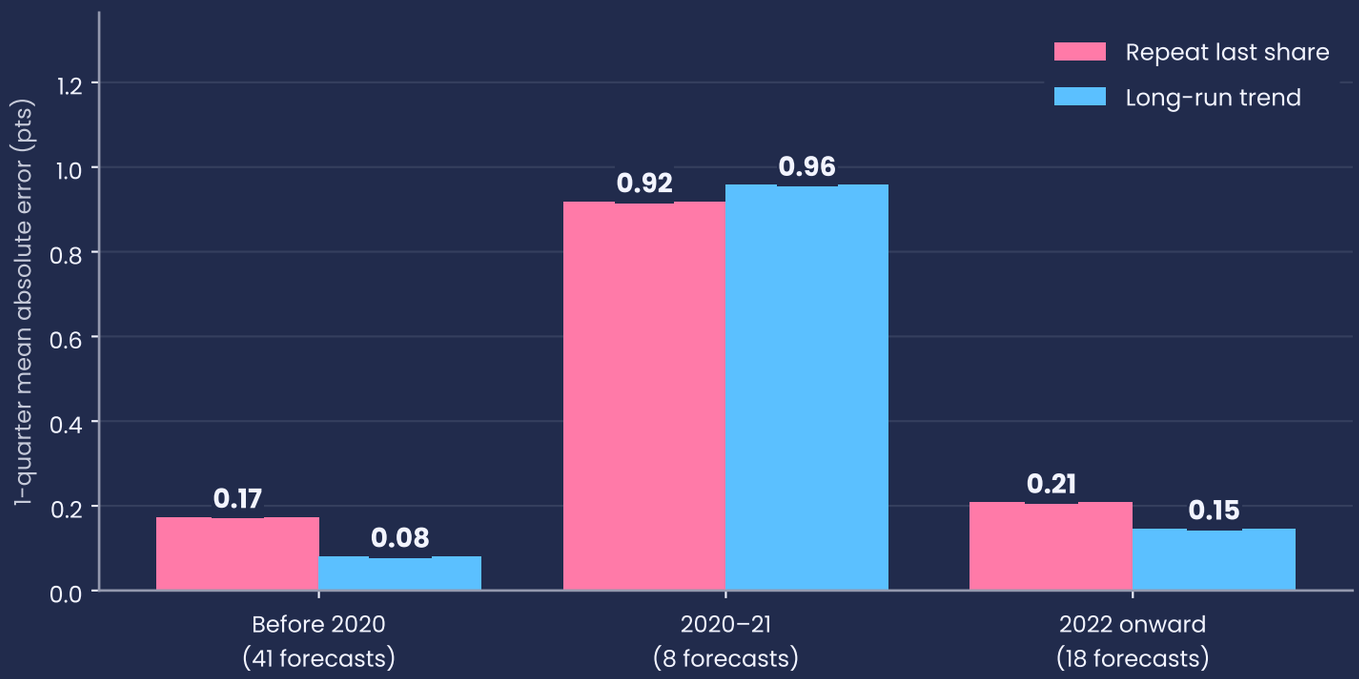


Errors are small and steady outside 2020–21, when both methods missed and the trend missed by more.

Inside the numbers

EXHIBIT 3

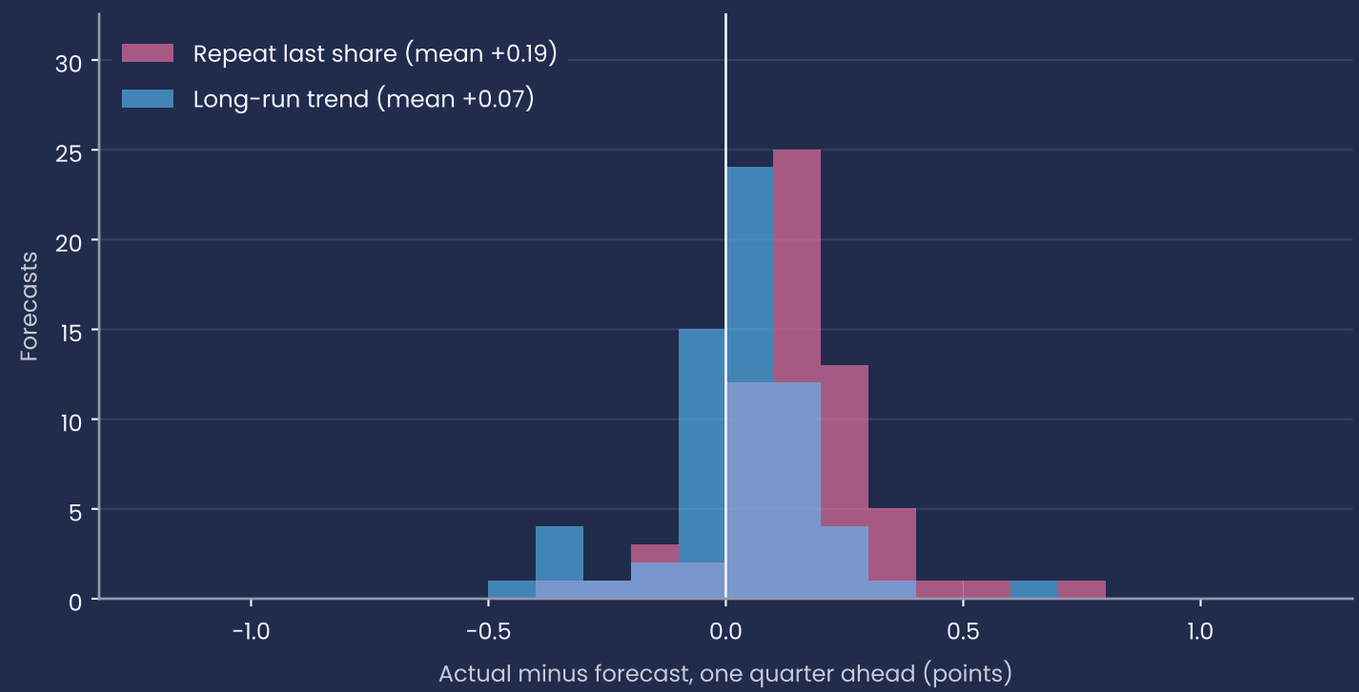
Error by period



The trend is the better forecast in ordinary periods and the worse one in the shock.

EXHIBIT 4

Bias: which way each forecast misses

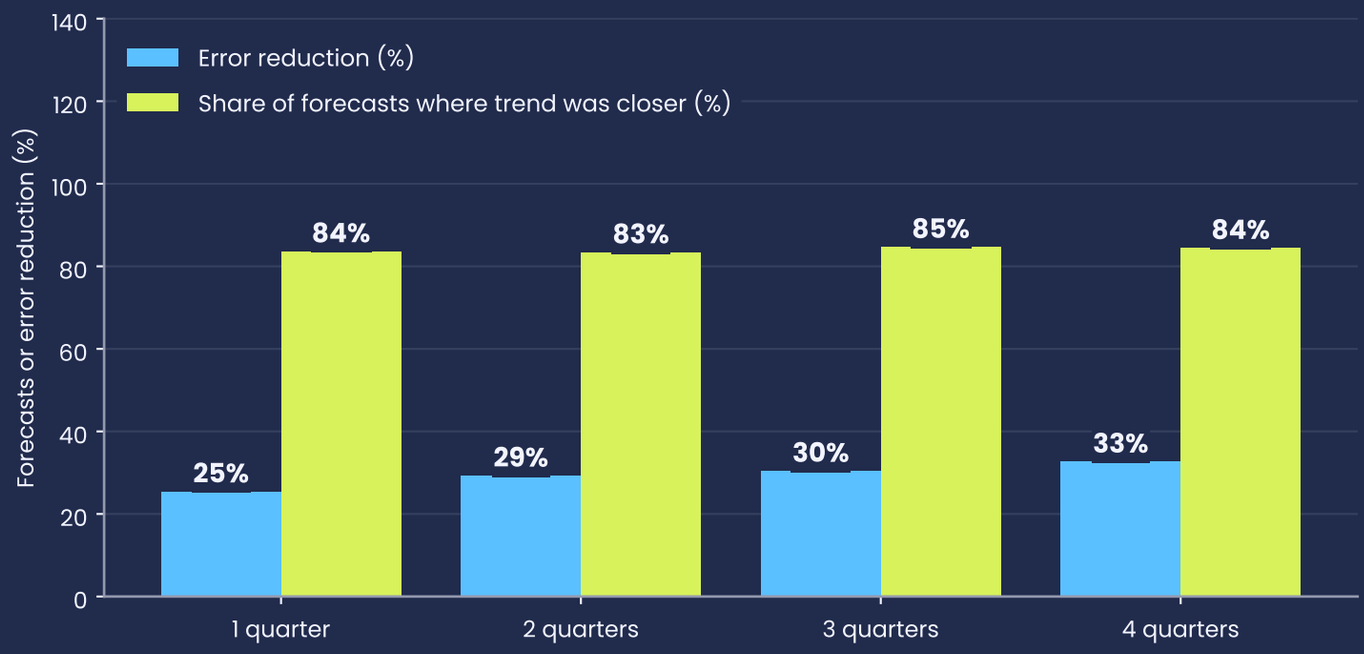


Naive errors sit to the right of zero because the share usually rises. The trend forecast is centred.

What changes the answer

EXHIBIT 5

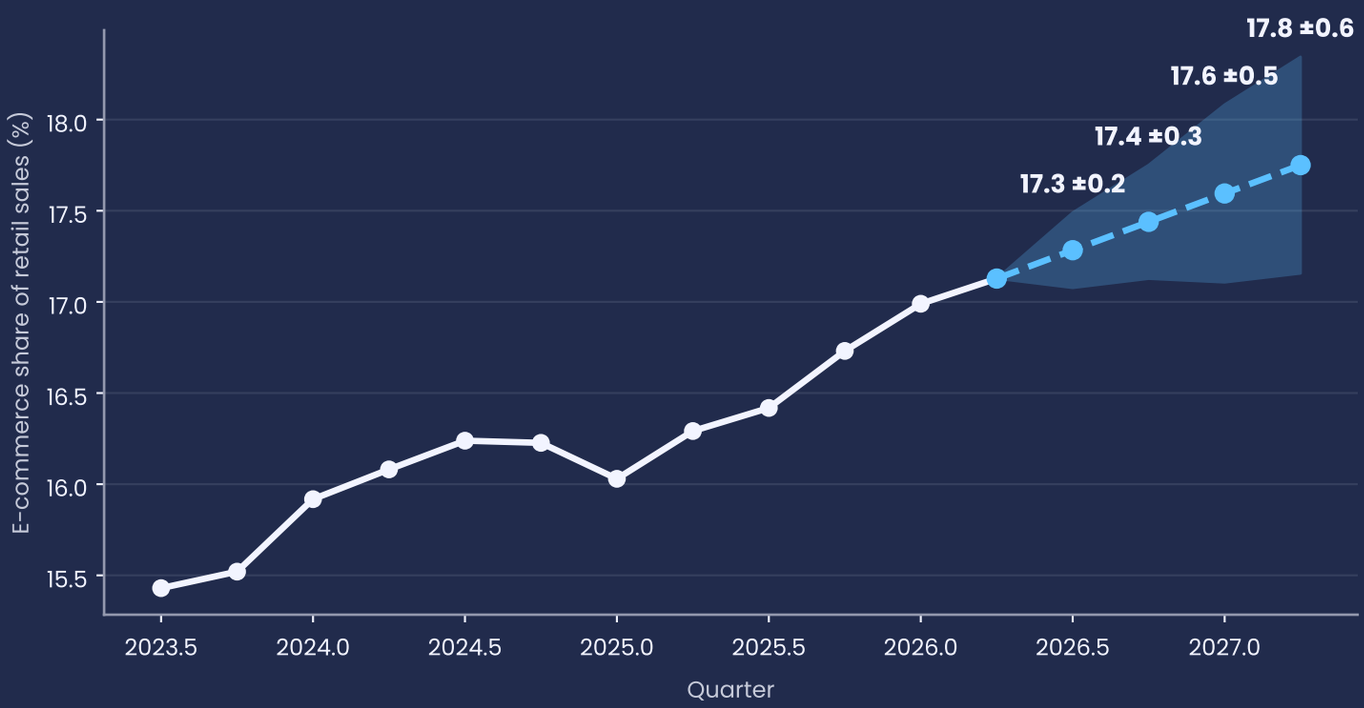
Skill by horizon



Error reduction rises from 25% to 33%. The trend wins 83% to 85% of forecasts at each horizon.

EXHIBIT 6

Planning allowance for the next four quarters



Trend forecast from 2026 Q2 with the 80th percentile of past absolute errors at each horizon as the band.

How it was built and how far it goes

RECOMMENDED USE

- Use the trend forecast as the default planning assumption and attach the horizon-specific allowance.
- Switch to a judgment override when buying patterns shift abruptly; 2020–21 shows the trend fails then.
- Re-run the backtest each release; the allowance should move with the data.

METHOD

- Quarterly e-commerce share of retail sales, recomputed from Census totals, 107 quarters from 1999 Q4 to 2026 Q2.
- Rolling-origin evaluation: 67 one-quarter origins down to 64 four-quarter origins. Trend forecast is last value plus horizon × average quarterly change since 1999 Q4.
- Re-run for this report from the saved release ledger; the published errors were reproduced to three decimals.

LIMITS

- Uses the latest vintage, so earlier quarters include revisions not available in real time.
- Two simple benchmarks only; no seasonal or model-based forecast is compared.
- The allowance band is empirical and assumes future errors resemble past ones.

NUMBERS RECONCILED

Quantity	Value	How it was checked
MAE, naive, 1 quarter	0.271	re-run; matches published 0.271
MAE, trend, 1 quarter	0.202	re-run; matches published 0.202
MAE, trend, 4 quarters	0.605	re-run; matches published 0.605
Error reduction	25.4%	1 - 0.202 ÷ 0.271
Origins	67 to 64	one fewer per extra quarter