

Look-Ahead Survives Both a Split Sample and a High t

— Moving the evaluation point from **0** to **59** seconds turns **+2.201** into **−0.845**, with an interpolated zero crossing at **39.96** seconds — a single minute turns **+1.378** into **−0.411** — only delaying reveals it — [Paper 426]

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— *From thinking to syncing.* —

Abstract

A split sample and a high t value are taken as evidence that a procedure has passed. This paper shows that look-ahead survives both—and that the only way to find it is to delay the moment of evaluation. No new theorem or law is claimed. First, this is the core of the paper. Moving the evaluation point from 0 to 59 seconds turns the amount per item from +2.201 into **−0.845**, sign and all (Section 2). Second, the interpolated zero crossing is at **39.96** seconds. The sign changes inside a single minute (Section 2). Third, a second measurement shows the same shape: delaying by one minute turns +1.378 into **−0.411** (Section 2). Fourth, the fall of 1.789 exceeds the original 1.378. This is not attrition (Section 2). Fifth, synthetically, a rule that sees 60 seconds ahead returns +2.9793 and one that does not returns **−0.0648**, an order apart (Section 3). Sixth, the separator is whether it survives a shift in time. Neither the split nor the t value is (Section 4).

Scope of this paper (scope note): No new theorem or law is claimed—look-ahead bias, out-of-sample testing and the idea of a delay test are all standard. No particular procedure or implementation is discussed—which tool was used, and who built it, are not the subject, and none is named. The causes of look-ahead are not classified—whether it comes from a convention about intervals, from rounding in the record, or from the direction of aggregation is not the subject. Only detection is treated. No remedy is proposed—how to rebuild the procedure once it is found is not the subject. Trading is not discussed—the figures come from observations of a time series, but neither trading nor any market is the subject. Robustness to delay is not called good—surviving a delay is evidence that there is no look-ahead, not evidence that the procedure is useful. Relation to earlier papers: Paper 425 showed that a delay leaves the amount and takes the certainty—there the delay swelled the denominator; here it reverses the sign. Paper 300 showed that common root and distinct root can be decided—“survives a split sample” and “survives a shift in time” are distinct roots by that criterion. Paper 317 showed that a significance level is a promise per test—there the number of attempts was the problem; here reducing attempts does not help. Paper 422 showed that the condition named as a rule’s core does not move the result—the same operation, removing something and measuring, is what works there too. What is added is tabulating the amount at four shifted evaluation points, locating the zero crossing at 39.96 seconds by interpolation, testing that interpolation at its endpoints, showing that the fall exceeds the original amount, separating rules with and without look-ahead by an order of magnitude synthetically, and placing the separator at “survives a shift in time”.

1. Notation and the Question

Setting: Suppose a procedure decides using information at time τ and the result is measured. Write $V(\delta)$ for the value when the moment of evaluation is delayed by δ .

$$V(0), V(20), V(40), V(59) \quad (\text{seconds})$$

If V holds as δ grows, the procedure is not using information from beyond τ .

Observation 1.1

A sample is split in order to catch overfitting. Build on the first half, test on the second—standard practice.

Observation 1.2

But look-ahead enters both halves equally. The same distance is seen ahead in each—so the second half performs well too.

Question: What, then, must be moved for it to show.

2. The Sign Changes Inside a Minute

Computation 2.1: Shift the moment of evaluation four ways and take the amount per item.

Shift	Amount per item
0 s	+2.201
20 s	+0.907
40 s	−0.002
59 s	−0.845

Observation 2.2

Positive before the shift, negative after 59 seconds. The sign reverses—monotonically, without levelling off.

Computation 2.3: Interpolate linearly between 20 and 40 seconds for the zero crossing.

$$\delta_0 = 20 + 20 \times \frac{0.907}{0.907 - (-0.002)} = \mathbf{39.96\ s}$$

Observation 2.4

Test the interpolation itself. At the endpoints it returns +0.907 and −0.002—confirming the algebra.

Observation 2.5

The sign changes in less than a minute. 39.96 seconds—so the procedure leans on information from inside that minute.

Computation 2.6: Take a second measurement. Delay the moment of decision by one minute.

+1.378 becomes **−0.411**.

Observation 2.7

The fall is 1.789, larger than the original 1.378. This is not attrition—“a minute’s worth of opportunity was missed” does not produce a fall of that size.

3. Setting Both Side by Side Synthetically

Computation 3.1: Place two rules on a random walk. One reads the value 60 seconds ahead to choose its direction; the other uses only the preceding value.

Rule	Amount per item
With look-ahead	+2.9793
Without	−0.0648

Observation 3.2

With look-ahead the value is large and positive. It gets the direction right, so it must come out positive—on a random walk, where there is no information at all.

Observation 3.3

Without it, the value is near zero. −0.0648—the other side of the boundary; the two separate by an order of magnitude.

Observation 3.4

This synthetic case contains no structure to be found. And still look-ahead produces a high value—a high value is not by itself evidence of information.

Observation 3.5

And splitting the sample leaves the gap intact. The same distance is seen ahead in both halves—out-of-sample testing does not catch this kind of error.

4. The Separator

The separator: does it survive a shift in time.

Observation 4.1

Splitting the sample works against overfitting. The sample used to shape the rule is separated from the one used to test it—but if the same look-ahead is in both, the split achieves nothing.

Observation 4.2

A high t value does not help either. Look-ahead is systematic, so t rises with the count—a high t can be a symptom of strong look-ahead rather than of a strong effect.

Observation 4.3

Only a shift in time is independent of both. Look-ahead is tied to the clock—shift it and the advantage breaks. If it does not break, the information was not from ahead.

Observation 4.4

These are distinct roots by the criterion of Paper 300. Both are called “it passed the test”—one moves the partition of the sample, the other translates the clock. Different axes.

Observation 4.5

And the convention for intervals must be checked per implementation. Whether the value representing a time is the value at the start or at the end of its interval depends on how the aggregation was done—it can be checked in one line, and must not be carried over from another implementation.

Observation 4.6

To be honest—surviving a delay is not evidence that a procedure is useful. It only says there is no look-ahead—whether the content is any good must be measured separately.

Observation 4.7

One last thing—owning the tool is no use unless it is applied. A delay test is a few lines of code—what is hard is running it against a result that looks good.

5. Roll Call and Closing

1. **+2.201 at 0 seconds** (Computation 2.1): **before the shift.**
2. **−0.845 at 59 seconds** (Computation 2.1): **the sign reverses.**
3. **Zero crossing at 39.96 seconds** (Computation 2.3): **by interpolation.**
4. **The interpolation matches at both ends** (Observation 2.4): **a self-test.**
5. **One minute: +1.378 → −0.411** (Computation 2.6): **a second measurement.**
6. **The fall 1.789 exceeds the original 1.378** (Observation 2.7): **not attrition.**
7. **Synthetic look-ahead gives +2.9793** (Computation 3.1): **with zero structure.**
8. **Without it, −0.0648** (Observation 3.3): **the other side of the boundary.**
9. **Splitting leaves the gap** (Observation 3.5): **out-of-sample does not catch it.**
10. **The separator is a shift in time** (Observation 4.4): **distinct roots by Paper 300.**

Closing: A split sample and a high t value are taken as evidence that a procedure has passed—building on the first half and testing on the second is standard practice. But look-ahead enters both halves equally—the same distance is seen ahead in each, so the second half performs well too. The only way to find it is to delay the moment of evaluation—moving the evaluation point from 0 to 59 seconds turns the amount per item from +2.201 into −0.845, sign and

all, monotonically and without levelling off. Interpolating between 20 and 40 seconds puts the zero crossing at **39.96** seconds, and the interpolation returns the original values at its endpoints. So the procedure leans on information from inside a single minute. A second measurement shows the same shape: delaying the decision by one minute turns **+1.378** into **−0.411**, a fall of **1.789** that exceeds the original 1.378—and “a minute’s worth of opportunity was missed” does not produce a fall of that size. Set side by side synthetically, the two separate by an order of magnitude—of two rules placed on a random walk, the one reading 60 seconds ahead returns **+2.9793** and the one that does not returns **−0.0648**. The synthetic case contains no structure to be found, and still look-ahead produces a high value—so a high value is not by itself evidence of information. Splitting the sample leaves the gap intact, because the same distance is seen ahead in both halves. One thing separates them—does it survive a shift in time. Splitting works against overfitting, but achieves nothing if the same look-ahead is in both halves. A high t does not help either: look-ahead is systematic, so t rises with the count, and a high t can be a symptom of strong look-ahead rather than of a strong effect. Only a shift in time is independent of both—look-ahead is tied to the clock, so shifting breaks it, and if it does not break, the information was not from ahead. They are distinct roots by the criterion of Paper 300, one moving the partition of the sample and one translating the clock. The convention for intervals must also be checked per implementation, since whether a value represents the start or the end of its interval depends on the aggregation; it takes one line, and must not be carried over from elsewhere. To be honest—surviving a delay is not evidence that a procedure is useful. It only says there is no look-ahead, and whether the content is any good must be measured separately. One last thing—owning the tool is no use unless it is applied. A delay test is a few lines of code; what is hard is running it against a result that looks good.

References

1. Lo, A. W., & MacKinlay, A. C. (1990). Data-Snooping Biases in Tests of Financial Asset Pricing Models. *Review of Financial Studies*.
2. White, H. (2000). A Reality Check for Data Snooping. *Econometrica*.
3. Kaufman, S., Rosset, S., Perlich, C., & Stitelman, O. (2012). Leakage in Data Mining: Formulation, Detection, and Avoidance. *ACM Transactions on Knowledge Discovery from Data*.
4. Bailey, D. H., Borwein, J. M., López de Prado, M., & Zhu, Q. J. (2014). Pseudo-Mathematics and Financial Charlatanism. *Notices of the American Mathematical Society*.
5. Yamagishi, Y. (2026). *The Three Hundredth Census: Whether Two Things Share a Root Is Decidable* [Paper 300]. Zenodo. 10.5281/zenodo.22171914
6. Yamagishi, Y. (2026). *A Significance Level Is a Promise per Test, Not per Study* [Paper 317]. Zenodo. 10.5281/zenodo.22208819
7. Yamagishi, Y. (2026). *The Condition Named as the Core of a Rule Does Nothing* [Paper 422]. Zenodo. 10.5281/zenodo.22700081
8. Yamagishi, Y. (2026). *The Amount Did Not Fall and the Certainty Did* [Paper 425]. Zenodo. 10.5281/zenodo.22700154

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