

Is price drawn to its moving average?

294,318 returns to the average in 81 forex, metals and crypto markets, October 2022 to September 2026, set against copies of the same markets with no memory.

SixOne8 Research October 2026 10 min read

DATA	UNIVERSE	BARS	RETURNS
6 Oct 2022 – 30 Sep 2026	81 markets	1h · 4h · 1d	294,318

ABSTRACT

Traders often say price is "drawn to" its moving average. By construction it is the other way round: an average is drawn toward price, a little every bar. We measured both at once. For every time price stretched at least one ATR from its average and came back, in 81 markets on three timeframes (294,318 returns), we split the gap closed into the part price travelled and the part the average travelled. With EMA(20) on hourly bars, price did most of the travelling in 81% of returns and the average in 19%. Then we ran the same measurements on shuffled copies of each market, which keep its volatility but have no memory. They gave 81% and 19%, the same time to return and the same share of touches that "held". Returning to the average, and bouncing off it, are what any price series does around its own average. The differences that remain are a point or two.

KEY FINDINGS

81% vs 81% of returns to EMA(20) where price did most of the travelling: real markets against memoryless copies.	53% vs 53% of touches where price went back the way it came before breaking through: the average "holding".	4 bars median time from the furthest point back to EMA(20), hourly, in real and shuffled markets alike.
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01 Question

"Price always comes back to the moving average." It is one of the first things traders learn to see on a chart, and it is usually said as if the average pulls price toward it, like a magnet or a rubber band. But a moving average is made from price. Every new bar moves it toward the latest price, so if anything is being drawn, it is the average.

Both can be measured. Each time price stretches away from its average and the two meet again, the gap that closed was closed partly by price moving and partly by the average moving. We ask how that split falls, and then the question that decides whether any of it means something: does a market with no memory at all behave any differently?

02 Splitting a return in two

An *excursion* is the stretch between two bars whose range touches the average. If the close got at least one ATR from the average somewhere in it, we call its end a *return*, and we start the clock at the furthest close. From there to the touch, price travelled some distance toward the level where they met, and the average travelled the rest. The two parts add up to the gap exactly.

$$\text{Gap at the furthest point} = \text{price's part} + \text{the average's part} \quad (1)$$

Figure 1 shows one return of each kind. On the left, price fell back to a slowly rising average. On the right, price went sideways and drifted slightly further away, and the average came all the way to it. On a chart both look like "price came back to the average".

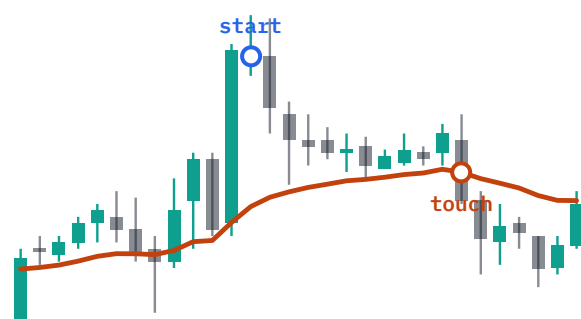
FIGURE 1

Two returns to EMA(20): who did the travelling?

Real hourly candles · EMA(20) in orange · the bar under each splits the gap closed between price and the average

Price came back to the average

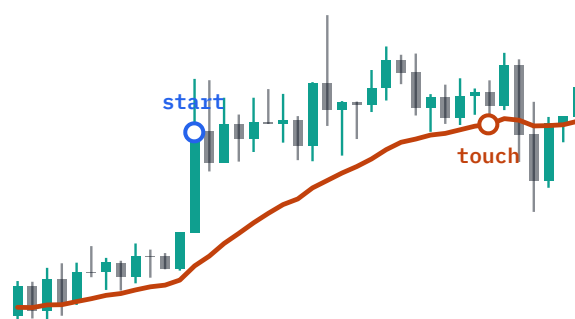
EUR/USD, 1-hour candles, 27 Jun – 28 Jun 2024



Gap at the start 2.2 ATR · price travelled +1.7 · the average travelled +0.5

The average came to price

BTC/USD, 1-hour candles, 24 Feb – 25 Feb 2024



Gap at the start 2.2 ATR · price travelled -0.1 · the average travelled +2.3

Source: SixOne8 Research, from Twelve Data candles stored by SixOne8. "start" is the close furthest from the average; "touch" is the first later bar whose range reaches it. Gaps in ATRs at the start. Chosen as clear examples of each kind, not as typical; Figure 2 shows how common each is.

03 Who did the travelling

Across 135,996 hourly returns to EMA(20), price did most of the travelling in 81%. The average did most in 15%, and in another 3.7% price was moving *away* when the average caught up with it. Figure 2 lays out a hundred of them, beside the same count for shuffled markets.

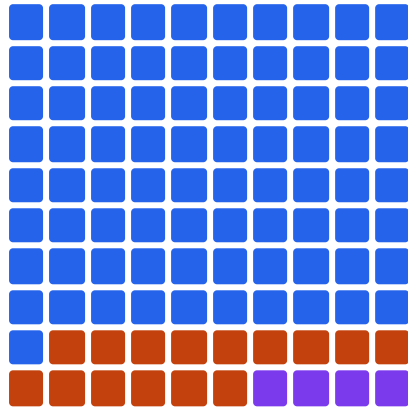
FIGURE 2

A hundred returns to EMA(20), sorted by who did the travelling

1-hour bars · 135,996 real returns and the same measure on shuffled copies of each market

■ Price travelled most of the gap ■ The average travelled most of the gap
■ Price moved away; the average caught it

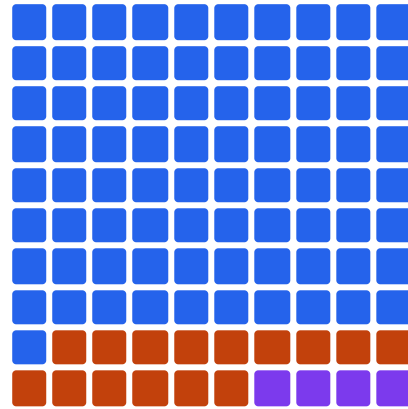
Real markets



81 price did most 15 average did most

4 price moved away

Shuffled markets (no memory)



81 price did most 15 average did most

4 price moved away

Each square is one return in a hundred. A shuffled market is the same market's bars in random order: same volatility, same bar shapes, no memory, so nothing in it can draw price anywhere. The two grids are close to identical.

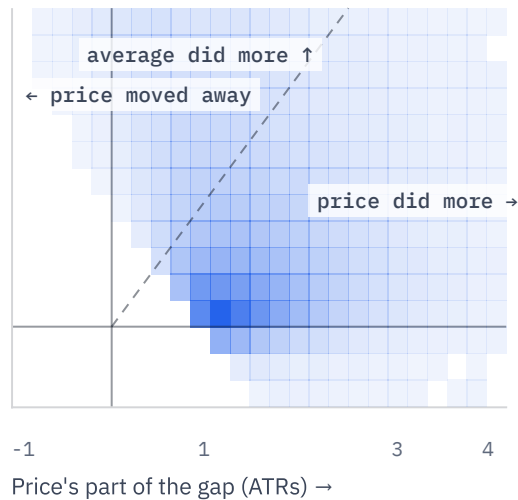
A shuffled market is built from the real one: each bar's open, high, low and close, taken relative to the previous close, put back in random order. It keeps the market's volatility and the shape of its bars and loses all memory, so no level can attract it. If price were drawn to its average, the real grid would show more blue than the shuffled one. It shows 81% against 81%.

FIGURE 3

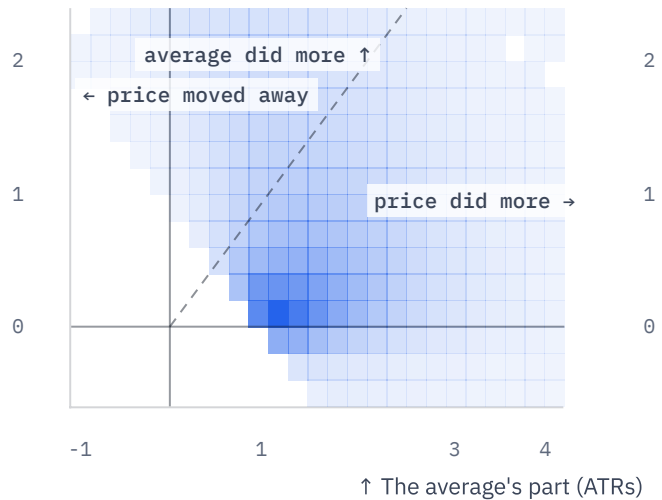
Where every return falls: price's part against the average's part

EMA(20), 1-hour bars · each return placed by how far each side travelled, in ATRs · darker where more fall

Real markets



Shuffled markets



Above the dashed diagonal the average travelled further than price. The cloud sits low and to the right in both panels: most gaps closed because price moved, and the shape of the cloud is the same with or without memory in the market.

Figure 3 places every return by its two parts. The cloud is the same shape in both panels. Price does most of the work because price is more volatile than an average of itself: EMA(20) moves about a tenth of the way toward price each bar, and price moves a full bar's range.

04 The anatomy of a return

Figure 4 follows the median return from the furthest point to the touch, with time stretched so every return runs from 0 to 1. Price comes down most of the way; the average rises to meet it for the last part. The dashed lines are the shuffled markets, almost on top of the real ones.

FIGURE 4

The anatomy of a return: price and the average, from the furthest point to the touch

EMA(20), 1-hour, crypto · median paths in ATRs against the level where they met · time from start (0) to touch (1)



Both paths end at zero, the level where price and the average met. Price falls most of the way; the average rises a little to meet it. Forex looks the same (its median start is +1.20 ATR from the meeting level for price and -0.35 for the average).

05 Across timeframes and averages

The pattern holds on 4-hour and daily bars and for a slower average. With SMA(50) the average did most of the travelling less often, 12% of hourly returns, because a 50-bar simple average moves less per bar than a 20-bar exponential one. In every row of Figure 5 the real and shuffled bars are close to the same length.

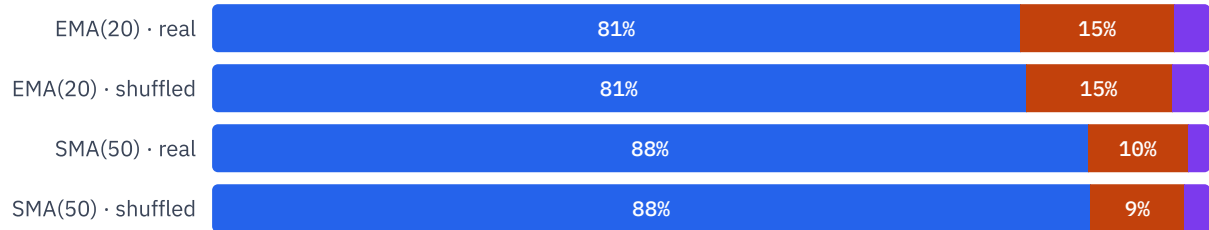
FIGURE 5

Who did the travelling, by timeframe and average

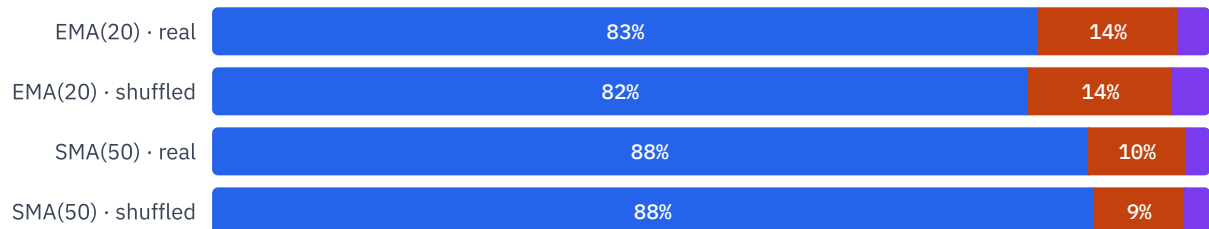
Share of returns in each category · real markets against their shuffled copies

- Price travelled most of the gap
- The average travelled most of the gap
- Price moved away; the average caught it

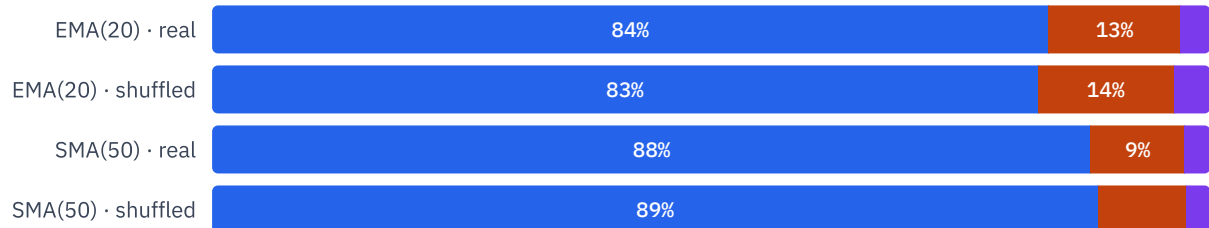
1 - HOUR



4 - HOUR



DAILY



A slower average leaves more of the work to price: it moves less each bar. Within each pair the real and shuffled bars are close to the same length on every timeframe.

TABLE 1 · Returns to the average, real against shuffled

Bars	Average	Returns	Gap	Price's part	Average's part	Average did most	Bars to touch	Held
1-hour	EMA(20)	135,996	1.75	1.22	0.35	19% / 19%	4 / 4	53% / 53%
1-hour	SMA(50)	94,951	2.30	1.82	0.20	12% / 12%	6 / 5	48% / 48%
4-hour	EMA(20)	33,412	1.74	1.23	0.36	17% / 18%	5 / 4	53% / 54%
4-hour	SMA(50)	22,652	2.33	1.81	0.21	12% / 12%	6 / 6	47% / 49%
Daily	EMA(20)	4,406	1.70	1.22	0.34	16% / 17%	4 / 4	54% / 54%
Daily	SMA(50)	2,901	2.28	1.77	0.21	12% / 11%	6 / 5	47% / 49%

Real returns from the furthest point; gap and parts are medians in ATRs at that point. Pairs are real / shuffled. Average did most: the average travelled at least half the gap, including the returns where price moved away. Held: after the touch, price went one ATR back out on its original side before one ATR through to the other.

The real markets had slightly fewer returns than their shuffled copies on every row. Fewer touches means longer excursions: real markets trend a little more than shuffled ones, so they stay away from their average a little longer before coming back.

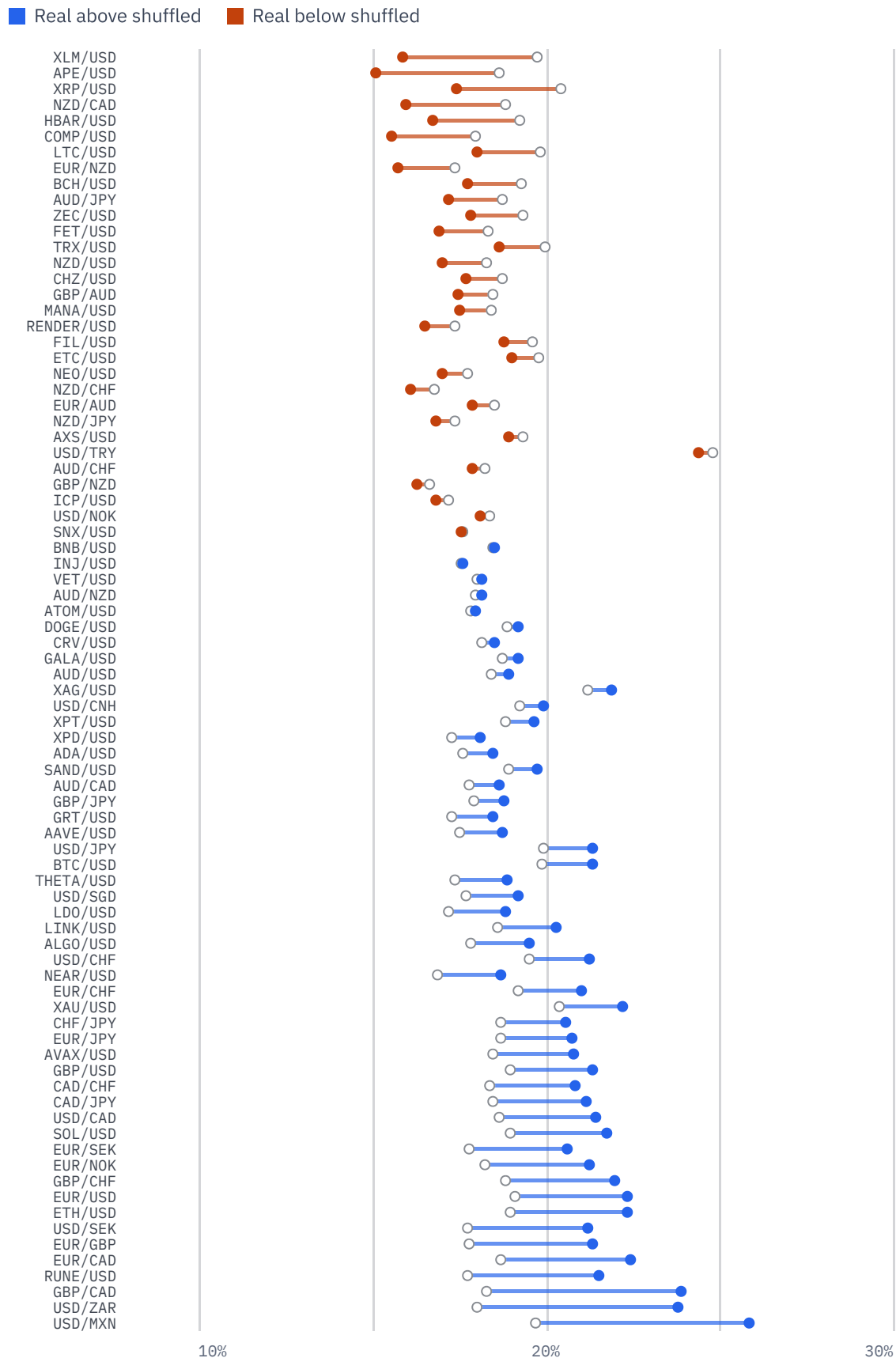
06 Market by market

Pooling can hide markets that behave differently. Figure 6 shows each market's share of returns where the average did most of the travelling, real against shuffled.

FIGURE 6

Market by market: how often the average did most of the travelling

EMA(20), 1-hour · filled dot real, hollow dot shuffled · sorted by the difference



50 of 81 markets sit slightly right of their shuffled copy. Forex leans that way (25 of 37); crypto splits about evenly (21 of 40).

The differences are small and mostly one-sided in forex: real pairs had the average doing most of the work +1.4 pts more often than their shuffled copies (90% interval +0.8 to +2.0). That fits pairs that drift sideways while their average catches up, a mild form of the "average drawn to price" idea. In crypto the difference is nil.

TABLE 2 · Real minus shuffled, by asset class (EMA(20), 1-hour)

Class	Markets	Average did most	90% interval	Held after touch	90% interval
Forex	37	+1.4	+0.8 to +2.0	+0.9	+0.4 to +1.4
Metals	4	+1.0	+0.7 to +1.4	+2.4	+1.0 to +3.8
Crypto	40	0.0	-0.5 to +0.4	-0.8	-1.2 to -0.4
All	81	+0.7	+0.3 to +1.1	+0.1	-0.2 to +0.5

Mean across markets of each market's real share minus its shuffled share, percentage points. Intervals: bootstrap over markets, 2,000 resamples. Coloured where the interval excludes zero.

07 Does the average hold?

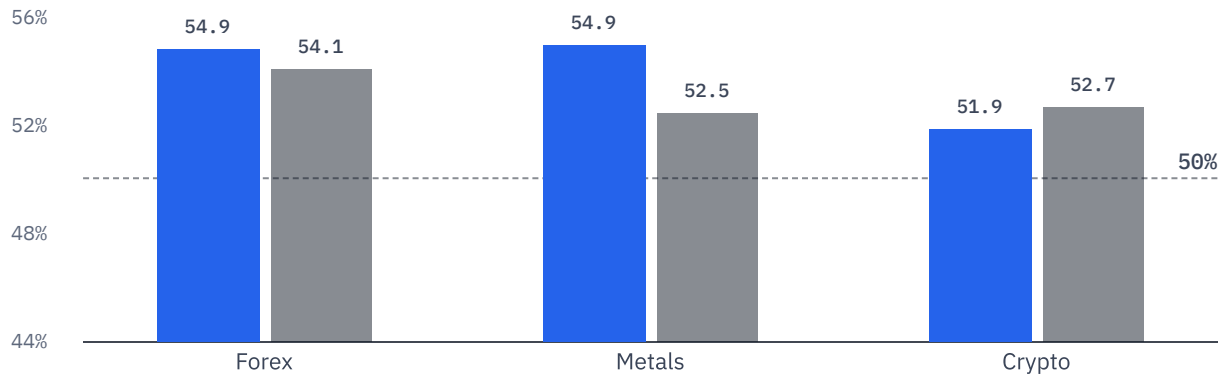
The other half of the folklore is that a moving average acts as support or resistance: price touches it and turns back. After each touch we watched which came first, a move one ATR back out on the side price came from, or one ATR through to the other side.

FIGURE 7

After the touch: back to the side it came from, or through to the other?

EMA(20), 1-hour · share of touches followed by a move one ATR back out on the original side first

■ Real ■ Shuffled



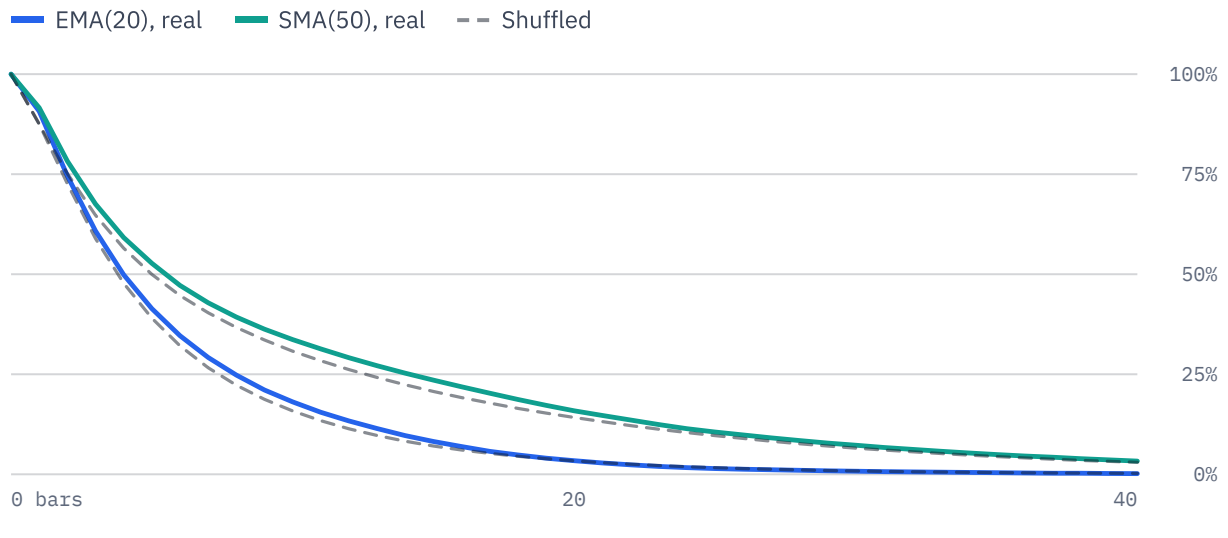
Within 120 bars of the touch. Above 50%, price more often went back the way it came — what a trader would call the average "holding". The shuffled markets hold just as often: it is a property of averages, not of markets.

Real touches held 53.1% of the time and shuffled ones 53.2%. The fast average "holds" slightly more often than not, but it does so in a market with no memory as well, because the average lags: at the touch it is still pointing the way price came from. The slower SMA(50) held slightly less often than not, 48.4% real and 48.1% shuffled; neither number is about the market. Crypto held a little *less* often than its shuffled copies (−0.8 pts, −1.2 to −0.4), consistent with trends that carried through the average.

FIGURE 8

How long price stayed away

1-hour bars · share of returns not yet back at the average, by bars since the furthest point



Half of EMA(20) returns took 4 bars or fewer from the furthest point, and half of SMA(50) returns 6. The real lines sit slightly above the shuffled ones at every horizon: real markets stayed away a little longer, the same mild trending that gives them fewer returns in Table 1.

08 What this means for a rule

None of this says a moving average is useless. It says that two of the things traders read into one, that price will come back to it and that it will hold, happen just as often in random data. A rule built on "price returns to the average" will find that it does, and so will the same rule on a coin toss. The test that matters is whether what you do at the average beats the same action at a random time, which is the comparison Paper No. 2 makes for crossovers.

- Expect a return to the average; it is close to certain and carries no information on its own.
- Price usually does most of the travelling, because it is more volatile than its own average.
- A touch that "holds" slightly more often than not is the average's lag, not support.
- Judge a rule against a baseline, such as random entries or a shuffled market, not against zero.

09 Methodology

Every figure in this paper comes from the definitions below.

DATA	1-hour candles built from 1-minute Twelve Data candles stored by SixOne8, 6 October 2022 to 30 September 2026, folded to 4-hour and daily bars on the app's own grid. The first 300 bars of each series warm the averages and the ATR up.
UNIVERSE	All 81 forex, metals and crypto markets in the SixOne8 catalogue with history from October 2022: 37 currency pairs, 4 metals and 40 crypto markets.
AVERAGES	EMA(20), SMA-seeded as the app computes it, and SMA(50). ATR(14), Wilder's smoothing.
TOUCH	A bar whose low is at or below the average and whose high is at or above it.
RETURN	An excursion between two touches in which a close got at least one ATR from the average. Measured from the furthest close; the last close still one ATR away is a second starting point, reported in the data file and leading to the same conclusions.
SPLIT	Price's part: how far the close at the start was from the average's value at the touch. The average's part: how far the average moved from the start to the touch. Both toward each other, in ATRs at the start.
HELD	After a touch, whether a close one ATR back out on the original side came before a close one ATR through on the other, within 120 bars.
SHUFFLED	Each market's bars as ratios to the previous close, permuted at random and rebuilt from the first close; three shuffles per market and timeframe, pooled.

Per-market differences, then a bootstrap over markets (2,000 resamples) for 90% intervals.

10 Limitations

Shuffling bars removes memory but also removes the daily rhythm of volatility, and the weekend gaps in forex and metals land at random times. A different definition of a touch (a close beyond the average rather than a range through it) or a larger distance than one ATR would change the counts, though not the comparison with shuffled markets, which uses the same definitions. Four years is one sample of market conditions.

11 Test it yourself

RUN IT YOURSELF

See how often your average really holds

SixOne8's entry check measures what happened after a condition fired, against the market's own drift, on any market and timeframe you follow.

1. Build a condition: price crosses below EMA(20) on 1h.
2. Run the entry check to see how price moved in the bars after it fired.
3. Try the same condition with SMA(50), and on a slower timeframe, and compare.

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