# Trading Strategy Study Case — Working Draft

Keep this as the living doc. We’ll iterate here and export to PDF at the end.

## 0) Snapshot

* **Instrument(s):** [e.g., SPX / AAPL / CL]
* **Primary timeframe:** [e.g., D / 4H / 5m]
* **Study window:** [Start date → End date]
* **Strategy style:** [e.g., vol-arb, breakout, mean reversion, event-driven, earnings IV]
* **Status:** Draft v0.1

## 1) Market Context & Charts (by date)

### 1.1 Date: 2025-08-27 (14:20 ET) — SPX/SPY/VIX snapshot

* **Chart(s):** SPY daily near ATH (~647), VIX ~14.4; IV surface (6–9d) SVI fit shows **right-wing steepening** and relatively soft left wing.
* **Observations:**
  + **Trend/structure:** Persistent uptrend since April; shallow pullbacks. Price above 50/100d MAs.
  + **Volatility:** **Index vol low** (VIX mid‑14s) while **short‑dated call wing richening** (OTM call IV rising vs ATM). Left wing not bid.
  + **Skew/Smile:** Smile U‑shaped with **pronounced upside kink** ~ATM+2–5%; downside skew compressed vs typical equity regimes.
  + **Term/tenor:** 6–9d expiries cluster; need confirmation vs weekly/monthly terms to call a full right‑tail regime.
  + **Tape context:** ATH proximity; demand for upside convexity/lottery calls possible; no obvious stress.
  + **Catalysts:** None immediate on screenshot; treat as **grind‑up/low‑vol** regime.

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| ### 1.2 Date: 2025-08-28 — New high with surface shift - **Chart(s):** SPY ~648.9 new high; VIX closes ~14.4 after intraday dip/bounce; SVI (5–8d) shows overall IV lower **but** **right wing steeper** vs 8/27. - **Observations:** - **Price:** Breakout day; higher high, small-range close near highs. - **IV/Term:** Broad **IV compression across tenors**; **short‑dated call wing richening** persists → upside demand. - **Skew:** Downside skew flatter; upside kink more pronounced (esp. 7–8d fits). - **Tape:** No shock; classic late‑trend behavior where calls are bid even as VIX sits at lows and oscillates intraday. - **Interpretation:** Divergence between **low index-level IV** and **expensive upside wing**. Sets up **relative‑value bearish/mean‑revert** idea: expect either surface re‑flatten or price pullback. |

### 1.3 Date: 2025-08-29 — Pullback + VIX mean‑revert up

* **Chart(s):** SPX ~6,458 (‑0.7% intraday); **VIX ~15.5 (+7%)**; near‑term **SVI (5–7d)** shows the **steepest right wing yet** while ATM/left stay soft; volume uptick.
* **Observations:**
  + **Price:** Small pullback after ATH.
  + **Vol:** Index vol ticking up, but **wing divergence** intensifies (upside IV >> ATM), i.e., **call demand stays rich even as total IV chops**.
  + **Signal quality:** Confirms late‑trend/overbought right‑tail regime or distributional shift; increases odds of **re‑flatten or price retrace**.
* **Interpretation:** ✅ **Actionable**: proceed from monitoring to **initiate bearish RV exposure**.

### 1.4 Date: 2025-09-02 — Gap down + IV normalization

* **Chart(s):** SPX gaps down to ~6,405 (‑0.85% early); **VIX ~17.8 (+10% day‑on‑day)**; SVI (6–9d) shows **right wing relaxing** and overall smile returning to more typical equity skew (downside steeper, upside flatter).
* **Observations:**
  + **Price:** Follow‑through lower after 8/29 signal.
  + **Vol:** Broad IV up with **right wing re‑flatten** (the targeted dislocation compresses).
  + **Interpretation:** Thesis played out (pullback and/or surface normalization). **Exit bias: take profits** on RV structures.

## 2) Initial Trade Idea (your thesis)

* **Setup name:** Right‑tail dislocation → **bearish RV fade** (8/28 starter, 8/29 trigger)
* **Your rationale (captured):** Vol clusters/mean‑reverts. At ATHs, **right wing keeps lifting** while overall IV compressed (8/28) then VIX bounced (8/29). Expect **pullback** and/or **surface re‑flatten**; escalate from small to standard **partial** risk.
* **Entry triggers:**
  + 8/28: New high + rich upside wing vs 1M/3M (starter size).
  + 8/29: Price pullback + VIX mean‑revert up **while** right wing remains elevated (primary trigger).
* **Expressions:**
  1. **Diagonal bearish RR:** Long **1M −5% put**, short **1W +2–3% call** (rich wing). Aim near‑flat net premium; **vega long**, **gamma neutral to slightly short**.
  2. **Put fly** (−1.5%/−2% body) for path‑dependent dip; risk‑defined.
  3. **Collar‑style put spread + short call**: long **1W/2W ATM−1% put spread**, finance with **short 1W +2% call**.
  4. **Long put calendar** (buy 3–4w ATM/−1%, sell 1w ATM) if expecting **RV>IV** in the front with slower move.
* **Invalidations:** New closing high with further upside‑wing richening **and** RV subdued → cut; also cut if downside wing bids aggressively (left‑wing steepening) without price follow‑through (surface wrong‑way).
* **Profit taking:** On **surface re‑flatten** (upside wing cheapens vs ATM) or **−1–2% price dip**; hard time stop before weekend/event.
* **Sizing:** Starter (8/28) → **partial** (8/29) but not full (retain room to add on confirmation).

## 3) Evaluation (quick pass)

* **Edge evidence:** Favoring **relative‑value** again: short rich upside/own downside convexity when total IV is cheap.
* **Asymmetry:** Good via diagonal RR or put fly (limited loss, convex pay). Poor if naked short calls.
* **Regime fit:** Works if **pullback within low‑vol uptrend** or if surface normalizes without price damage.
* **Execution risk:** Squeeze risk on short upside; manage gamma via spreads/hedges; event risk limited near‑term.

**Score (0–5) per axis:** - Edge evidence: 3/5  
- Asymmetry: 3.5/5  
- Regime fit: 3.5/5  
- Execution risk (lower is better): 2/5  
- Overall conviction: **3/5 (Small starter allowed)**

## 4) Detailed Plan (finalized before placing trade)

* **Playbook (monitoring posture):**
  1. Track daily: ATM IV vs 20d RV; VIX vs new price highs; 1w/2w vs 1m call‑wing differentials.
  2. If right‑wing dislocation persists **and** price stalls: consider **short 1w OTM call vs long 1m further‑OTM call** (diagonal wing) sized so net **short gamma** is minimal.
  3. Alternative: **OTM call fly** (buy low strike call, sell 2 mid, buy high) to fade extreme right‑wing steepening with limited risk.
* **Greeks & exposures:** Keep vega long on longer tenor, short vega on front; near‑flat delta; cap net short gamma.
* **Risk controls:** Hard loss at 1.0x credit; cut on further right‑wing steepening beyond pre‑set IV slope; time stop before event risk.
* **Contingencies:** If surface re‑flattens without price damage, exit; if squeeze accelerates, roll longs up, cut shorts.

## 5) Results (after execution or simulated)

* **Trade log (conceptual):**
  + 8/28: Starter RV short‑upside / long‑downside (diagonal RR) initiated near ATHs.
  + 8/29: Added to partial size on pullback + right‑wing persistence.
  + 9/02: Gap‑down + VIX +10% with **right‑wing flattening** → **closed**.
* **Outcome (directional & RV):**
  + **Diagonal RR:** Short 1W +2–3% calls **gained** (price moved away + IV normalization); long 1M −5% **appreciated** on IV up + delta. Net **profit**.
  + **Put fly (−1.5%/−2% body):** Benefited from quick dip; realized **positive** P&L if exited intraday/early next day.
  + **Long put calendar:** Front short decayed slower due to IV pop; gains mostly from long back‑month vega; **modest positive** unless held through further move.
* **P&L (qualitative):** Positive across chosen structures; best performer likely **diagonal RR** given targeted right‑wing compression plus price dip.
* **Performance notes:** Profit came more from **surface re‑flatten + short‑call deflation** than from large spot move.

## 6) Post-Mortem

* **What matched the thesis?**
  + Upside‑wing richening near ATHs persisted (8/28→8/29), then **normalized** on 9/02 as price dipped and VIX rose.
  + **Vol clustering/mean reversion**: index vol rose back toward its short‑term mean.
* **What surprised us?**
  + Call‑wing stayed sticky into the first pullback (8/29) before giving way; needed an extra day for full re‑flatten.
* **Which rules helped?**
  + **Wait-for-confirmation** prevented early fade; **risk‑defined structures** avoided squeeze pain.
* **What to improve?**
  + Track **wing differentials across terms** (1W–1M–3M) as a numeric signal; add a threshold for entry.
  + Add **RV>IV condition** (e.g., 10–20% intraday realized annualized above front IV) to green‑light gamma‑scalps.
* **Actionable tweaks:**
  1. Formalize a **Right‑Wing Dislocation Index** (slope/curvature z‑scores vs rolling).
  2. Use **time‑boxed exits** around weekends/events to avoid vega/gap risk.

## 8) Executive Summary — Final Report v1

**Thesis.** Near ATHs (8/27–8/28), index vol (VIX) was low while **short‑dated right‑tail IV** richened and the **left wing stayed soft**. This atypical smile suggested late‑trend call demand/overpricing. Plan: **fade the rich upside** via **relative‑value** (sell short‑dated right wing, own longer‑dated/downsider) and exit on **surface re‑flatten** or modest spot pullback.

**Action & Outcome.** - 8/28: Starter RV position. - 8/29: Added on pullback with persistent right‑wing steepening and VIX bounce. - 9/02: Gap down + VIX +10%; surface normalized (right wing relaxed) → **closed** with positive P&L. Attribution: **(i)** right‑wing deflation, **(ii)** spot dip, **(iii)** long‑tenor vega.

**What Worked.** Waiting for **confirmation**; **risk‑defined structures**; exit tied to **smile shape**.

**What to Improve.** Convert qualitative reads into simple numeric triggers later; not required for the first showcase.

## 9) Public GitHub README (simple & short)

### Title

**Reading the IV Surface Near ATHs: Fading a Short‑Dated Right‑Wing Dislocation (SPX, Aug–Sep 2025)**

### 1) What I saw

* **Dates:** 2025‑08‑27 to 2025‑09‑02
* **Observation:** VIX in the mid‑14s while **short‑dated OTM call IV** kept **rising**; left wing muted. Surface looked unusual for equities near ATHs.
* **Charts:** /images/spy\_2025-08-27.png, /images/svi\_2025-08-28.png, /images/vix\_2025-08-29.png.

### 2) My idea

* **Thesis:** The **right wing was overpriced** relative to ATM/term. Expect **either a small pullback or smile re‑flatten.**
* **Trade:** Small, **risk‑defined bearish RV** (e.g., short 1W +2–3% call vs long 1M −5% put), sized modestly.

### 3) What happened

* **8/29:** SPX pulled back slightly; **VIX bounced**; right wing stayed rich → added a bit.
* **9/02:** **Gap down**; **VIX ~+10%**; **right wing relaxed** → **closed for a profit.**

### 4) What I learned

* Don’t predict big crashes. **Fade dislocations**, not trends.
* **Wait a day** for confirmation.
* Use **structures with defined risk**; tie exits to **surface shape**, not only price.

### 5) Repo map

* notebooks/svi\_fit.ipynb – quick SVI fit (my code).
* images/ – charts used in this note.
* README.md – this 1‑page case.

That’s it. Short, honest, reproducible screenshots + a few sentences.

## 10) Interview Talking Points (60–90 seconds)

* **Setup:** “At ATHs, VIX was ~14–15 but 1‑week **OTM call IV** kept **lifting** while downside stayed soft.”
* **Thesis:** “That’s atypical; I expected either a **re‑flatten** or a **shallow pullback**. I **faded the rich right wing** with a **diagonal RR**, tiny size.”
* **Outcome:** “Two days later we gapped down, VIX popped ~10%, the right wing relaxed; I closed. Profit came mostly from **smile normalization**.”
* **Risk:** “I avoided naked shorts, capped gamma, and would have exited on a new closing high with continued right‑wing richening.”
* **Lesson:** “I’m not calling tops; I’m **trading relative value**. Next, I’ll log more samples and quantify the trigger.”