



# Catch a Volatility Contraction Pattern (VCP) Breakout in Taiwan Market

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## Outline

1. Topic Review
2. Flow chart
3. Methodology
4. Result



## Motivation & Goal

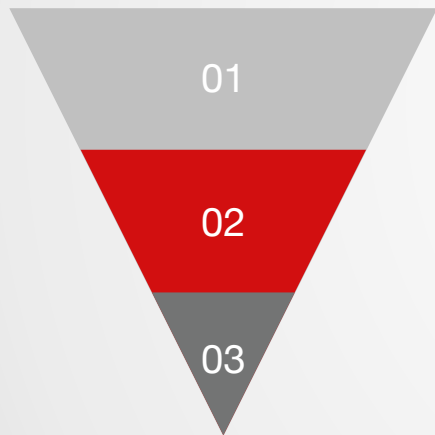
- ▣ **Inspired by Mark Minervini:** Winner of 2021 U.S. Investing Championship with **338.42% return**
- ▣ **VCP mastery:** Proven breakout pattern identification
- ▣ **Strategy:** Combines **technical strength & fundamentals**
- ▣ **Goal:** Apply VCP in Taiwan market



# Catch a Volatility Contraction Pattern (VCP) Breakout in Taiwan Market

## Objective:

Capture stocks with strong upward momentum in a short period.



Filter 1: Stage 2

**Filter 2: VCP**

Filter3: Strong fundamental support

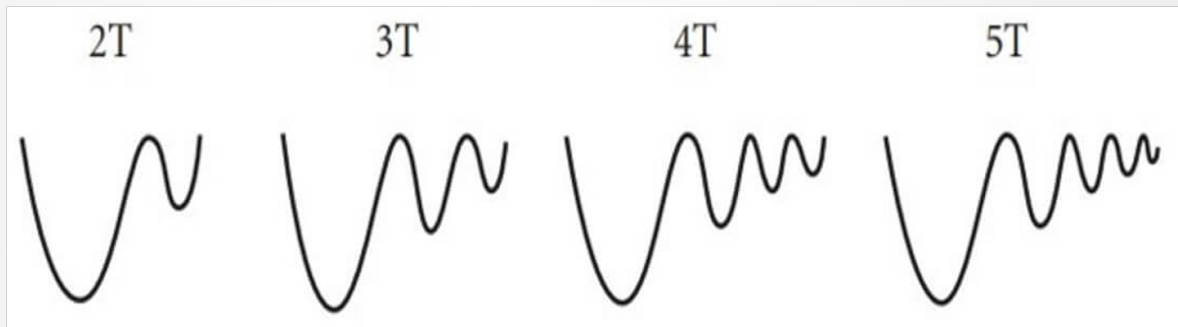


# VCP

The development of the VCP pattern includes:

- ▣ Decreased trading volume
- ▣ **Price range contraction**

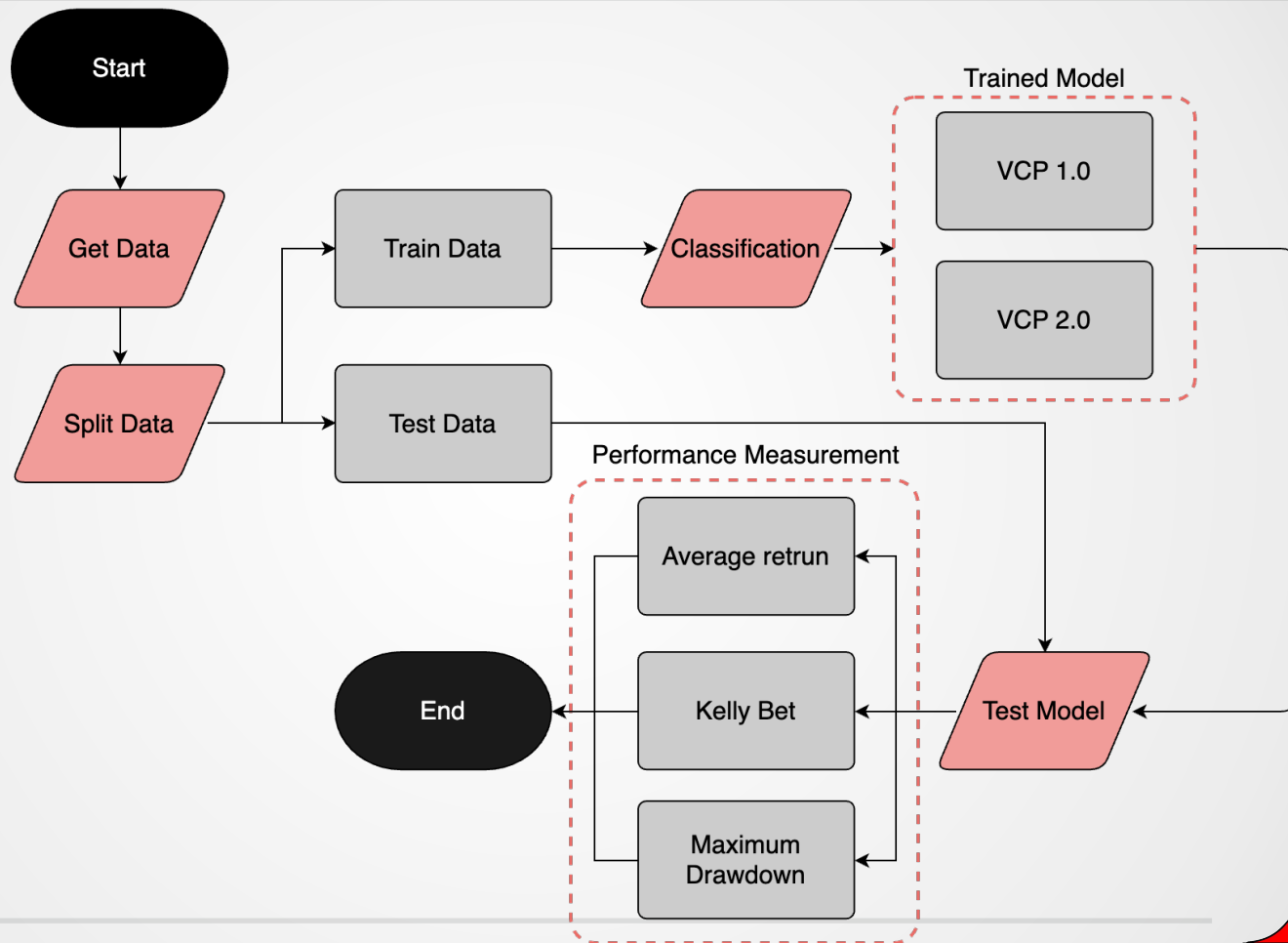
## Examples



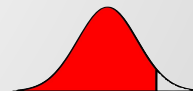
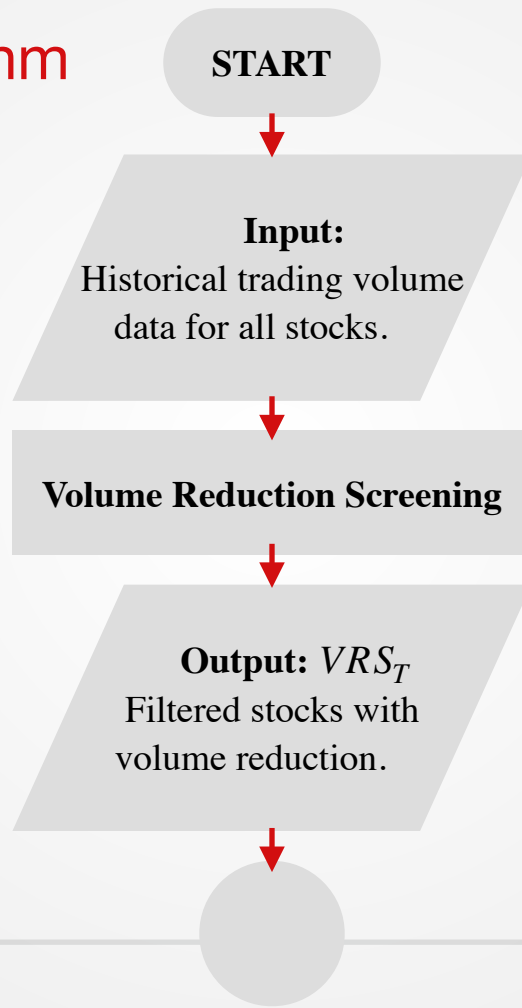
Source:  
Minervini, M. (2013). Trade Like a Stock Market Wizard: How to Achieve Super Performance in Stocks in Any Market. McGraw-Hill Education.



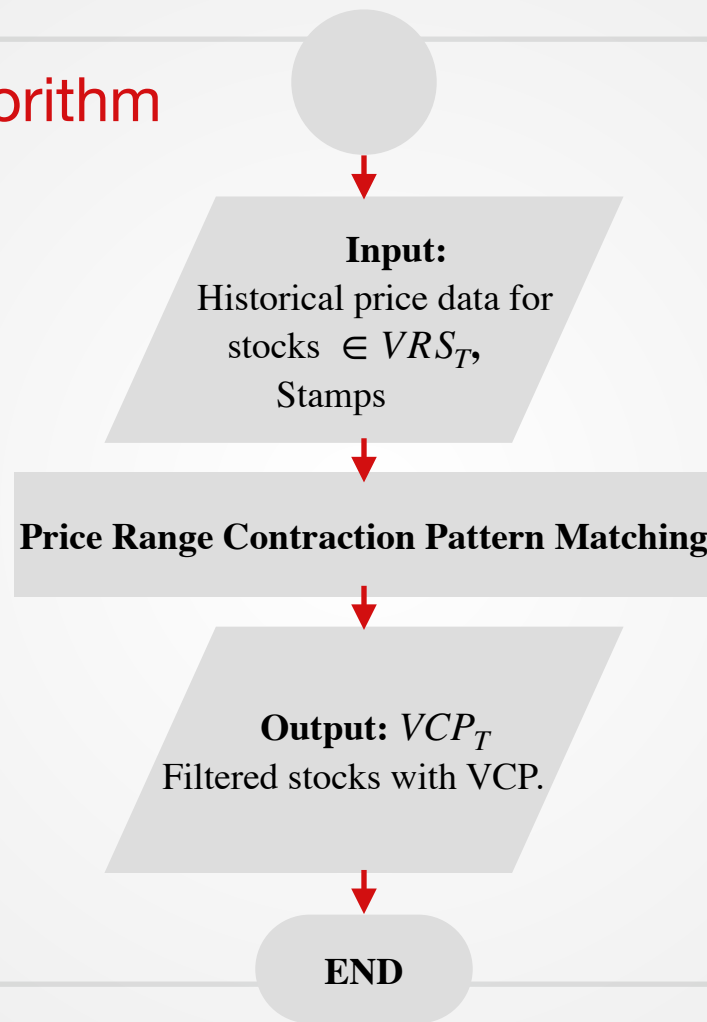
# Flow chart



# Flow chart of Algorithm



# Flow chart of Algorithm





# Algorithm

## VCP Trading Strategy

### Step1 :Volume Reduction Screening

1. For each stock  $j$  in the market at time  $T$ :

- Calculate volume moving averages:

$$V_j^{10ma} = \frac{1}{10} \sum_{t=T-9}^T V_{j,t}$$
$$V_j^{60ma} = \frac{1}{60} \sum_{t=T-59}^T V_{j,t}$$

2. Let the set of stocks with volume reduction be denoted by:

$$VRS_T = \left\{ j \mid V_j^{10ma} < 0.5 V_j^{60ma} \right\}$$



# Algorithm

## VCP Trading Strategy

### Step2 : Price Range Contraction Pattern Matching

For each stock  $j \in VRS_T$  at time  $T$ :

- Get historical prices  $P_{t,j}$  for past  $t$  days
- Normalize prices and time to  $\widetilde{P}_{t,j}$  using min-max scaling
- Calculate similarity score

$$\rho_j = \max \left( \cos \left( \widetilde{P}_{t,j}, stamp_k \right) \right), \forall k = 2, 3, \dots, 10$$



# Appendix: Examples for Rescaling

2330.TW Original Adjusted Stock Prices for 2024-11-15

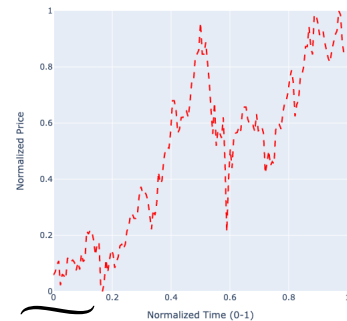


2330.TW Original Adjusted Stock Prices for 2022-02-07



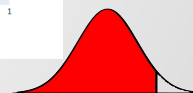
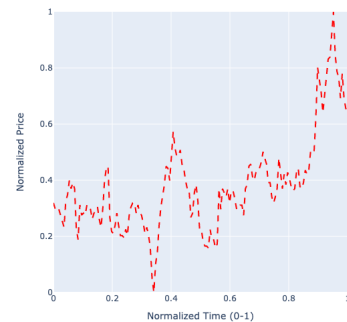
$P_{t,j}$

2330.TW Normalized Adjusted Stock Prices for 2024-11-15



$\widetilde{P}_{t,j}$

2330.TW Normalized Adjusted Stock Prices for 2022-02-07

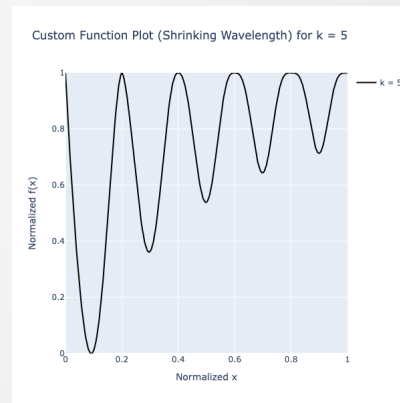
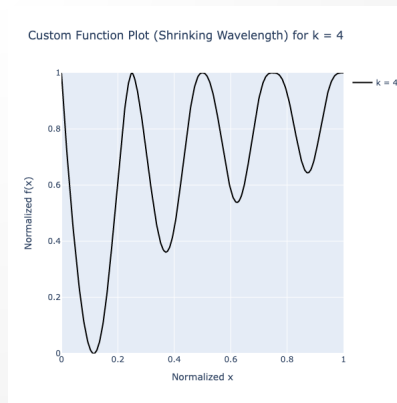
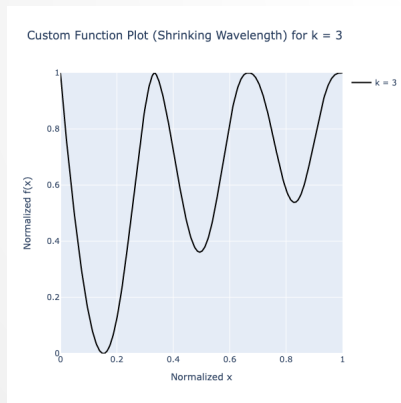
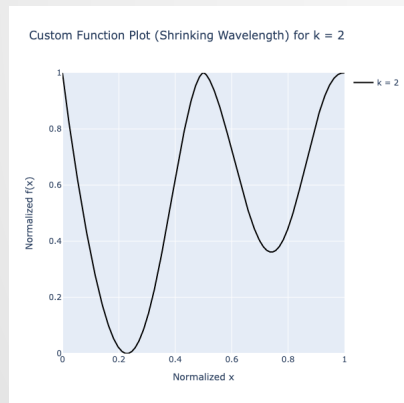


## Appendix: $Stamp_k, \forall k = 2, 3, \dots, 10$

### Examples

$$f(x) = -\frac{(\cos^2(3\pi x))^x}{x}, 0.5 < x < 0.5 + k \cdot \frac{1}{3}$$

After normalized the function to  $\widetilde{f(x)}$  using min-max scaling:



# Algorithm

## VCP Trading Strategy

### Step3 : Cross-sectional Ranking

- Sort all  $\rho_j$  in descending order
- Select top 50 stocks with highest similarity score:

$$VCP_T = \left\{ j \mid \text{rank}(\rho_j) \leq 50 \right\}$$



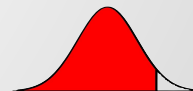
## Appendix: Cross-sectional Ranking

### Examples

$$\rho_j = \max \left( \cos \left( \widetilde{P}_{t,j}, \text{stamp}_k \right) \right), \forall k = 2, 3, \dots, 10$$

	$\rho_j$
$stock_1$	0.99
$stock_2$	0.96
▪	▪
▪	▪
▪	▪
$stock_n$	0.063

Rank = 50



# Algorithm

## VCP Trading Strategy

### Step4 Daily Update

- Calculate new  $VCP_{T+1}$  each day
- Track set changes:
  - Entry:  $N = VCP_{T+1} \setminus VCP_T$  (new stocks)
  - Exit:  $E = \left\{ j \mid r_j \geq (1 + \alpha) \vee r_j \leq (1 - \beta) \right\}$  (removed stocks)
  - Hold:  $H = (VCP_{T+1} \cup VCP_T) \setminus E$  (maintained stocks)



# Result

	VCP 1.0	VCP 2.0
Number of Trades	4,053	2,983
Win Rate	50.20%	49.59%
Average Win Return(bp)	550.03	491.36
Average Loss Return(bp)	-423.93	-393.44
Average Return per Trade(bp)	65.67	45.59
Win/Loss Ratio	1.3	1.25
Kelly Criterion	11.88%	9.26%
Holding period(day)	6	6
MDD	-21.40%	-19.60%

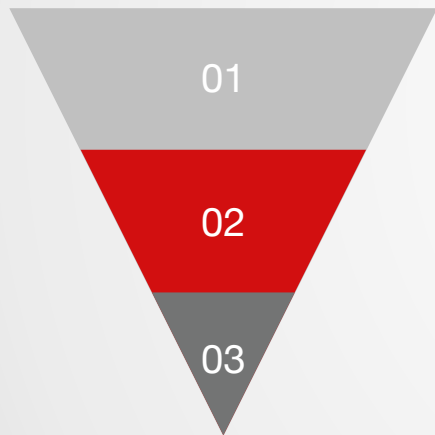




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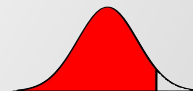
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# Study Plan

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